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Parsons, Brinckerhoff, Quade & Douglas
Title:
Report on Detroit street railway traffic and...
Place:
[Detroit]
Date:
1915

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Parsons, Brinckerhoff, Quade and Douglas.

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REPORT
ON
DETROIT STREET RAILWAY TRAFFIC
AND PROPOSED SUBWAY

TO

BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY

BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS

JANUARY, 1915

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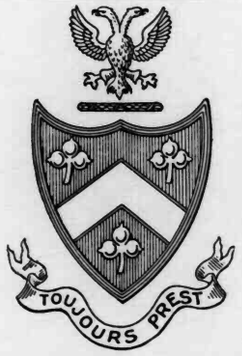

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Street Railway Purchase Agreement

ENTERED INTO BETWEEN

The City of Detroit and The Detroit United Ry.

March 17, 1919

To be Submitted to the Voters for Approval
APRIL 7, 1919

ISSUED BY THE BOARD OF STREET
RAILWAY COMMISSIONERS

Dear Mrs. Laughlin, I have placed a clipping to see this Bill

To the People of Detroit

The Board of Street Railway Commissioners respectfully submits herewith, the agreement entered into between it, on behalf of the City of Detroit, and the Detroit United Railway, for the purchase by the City of the street railway property, owned by the railway company, in the City of Detroit, the City of Highland Park, the Village of Hamtramck and the Township of Warren, Macomb County, as made and executed March 17, 1919.

Provided the agreement and a charter amendment accompanying it, are approved by three-fifths of the electors (male and female) of Detroit, voting on the propositions, the contract for the purchase of the property will become effective, and the city will come into possession of the property July 1, 1919.

The board wishes the people of Detroit to know that the agreement entered into is the result of numerous sessions of great length during which practically every phase of the street railway problem which has confronted the city for more than a score of years, was carefully considered.

The three possible methods of acquiring a street railway system, i. e., purchase by agreement, condemnation and piecemeal construction, were earnestly weighed, and, with the advice of street railway experts, the board unanimously concluded that the purchase by agreement plan was the most practicable and feasible method of affording relief from the conditions now prevailing.

In making the agreement, every effort was made to safeguard the interests of the people of Detroit, and the board respectfully

requests that the voters of this city study the agreement carefully and then express their preference at the election Monday, April 7.

The agreement as executed, follows in its entirety, but for the convenience and assistance of the voters, a synopsis of the salient features precedes it.

BOARD OF STREET RAILWAY COMMISSIONERS
ABNER E. LARNED,
President.
FRANCIS C. McMATH,
SIDNEY D. WALDON,
EDWARD T. FITZGERALD,
Secretary.

The Agreement in Brief

For the sum of $31,500,000.00, of which $15,000,000.00 is to be paid down July 1, 1919, and the remainder on or before December 31, 1931, the City of Detroit will acquire the street railway property of the Detroit United Railway within the City of Detroit, the City of Highland Park, the Village of Hamtramck and the Township of Warren, Macomb County. (See exceptions not necessary for operation of city system enumerated in Schedule "A.")

Delivery of the property is to be made July 1, 1919.

At the election April 7, the voters will be asked to approve bonds to the value of $24,000,000.00, to take care of the initial payment of $15,000,000.00 on July 1, and to permit of the making of extensions, betterments and improvements to the street railway system as now existing.

The city is to pay interest at the rate of six per cent on the unpaid portion of the purchase price (which is to come out of earnings) until said balance is fully liquidated, but it has the right to stop the running of interest by retiring the outstanding bonds secured by mortgage upon the property at any time before December 31, 1919, if it wishes to do so.

Upon conveyance and delivery of the street railway system to the city, the Detroit United Railway is to be permitted to run its interurban cars into the city substantially as heretofore, on payment to the city of cost of the transferring of cars over the city's

tracks, plus thirty per cent. At all times the entrance of these interurban cars into the city is to be under the reasonable control and regulation of the Board of Street Railway Commissioners.

The agreement between the city and the Detroit United Railway, relative to the compensation for use of the city's tracks by interurban cars, may be reviewed at five-year periods, and in case the city and company are unable to agree, the difficulties are to be submitted to the Michigan Railroad Commission for determination.

Neither the city nor the company shall issue transfers for transportation of passengers over lines or on cars of the other party, and the interurban passenger cars shall carry only passenger traffic originating in the city districts for points beyond the city limits, and passenger traffic originating outside said city limits coming into the city.

The Agreement in its Entirety

THIS AGREEMENT, Made and executed, in duplicate, this Seventeenth day of March, 1919, by and between the CITY OF DETROIT (hereinafter called the "City"), by the President and Secretary of its Board of Street Railway Commissioners, of the first part, and the DETROIT UNITED RAILWAY, a Michigan corporation (hereinafter called the "Company"), of the second part,

WITNESSETH:

WHEREAS, said Company is the owner of all the system of street railways in the City of Detroit and within the City of Highland Park, the Village of Hamtramck and the Town of Warren, Macomb County, and owns or controls certain interurban railways extending from the corporate limits of the City of Detroit to the various places outside the City limits; and

WHEREAS, the said City desires to buy and said Company is willing to sell all of the said street railway system and property within the City limits and within the City of Highland Park and the Village of Hamtramck and the Town of Warren, Macomb County, with certain exceptions hereinafter described; and

WHEREAS, said property is subject to certain mortgage indebtedness hereinafter specified;

NOW, THEREFORE, THIS AGREEMENT WITNESSETH:

The parties hereto agree as follows, the agreements of each being in consideration of the agreements of the others;

THE CITY OF DETROIT, SUBJECT TO THE APPROVAL BY THREE-FIFTHS OF THE ELECTORS OF SAID CITY VOTING ON THE PROPOSITION TO AUTHORIZE THIS CONTRACT AND TO

ISSUE BONDS FOR CARRYING OUT THE SAME, AND SUBJECT TO THE ADOPTION BY THE ELECTORS OF THE CITY OF THE CHARTER AMENDMENT SUBMITTED FOR THE PURPOSE OF AUTHORIZING THIS CONTRACT AND THE FULFILLMENT OF ITS TERMS (A COPY OF WHICH AMENDMENT IS HERETO ATTACHED) AGREES:

First: To buy from said Company all the street railway system property and rights within the limits of said City and the City of Highland Park and the Village of Hamtramck and the Town of Warren, Macomb County, as fully described in the schedule hereto attached and made a part the outstanding bonds in excess of said hereof, marked Exhibit A, and with the exceptions also fully described and set forth in said schedule, at and for the price of Thirty-one million five hundred thousand dollars ($31,500,000), to be paid—Fifteen million dollars ($15,000,000) in cash on or about the first day of July, 1919, and the balance thereof—being Sixteen million five hundred thousand dollars ($16,500,000)—on December 31, 1931, and interest on said balance at the rate of six per cent (6 per cent) per annum from the date of the payment of said Fifteen million dollars ($15,000,000), to be paid semi-annually on the thirtieth day of June and thirty-first day of December of each year until the said balance is fully paid; Provided, however, that the City shall have the right to stop the running of interest by retiring all of the outstanding bonds secured by mortgage upon the property hereby agreed to be conveyed, either in accordance with mortgage provisions or by purchase in open market, or directly from the holders thereof, of all bonds so secured, which the City is hereby granted the option or privilege to do. When all of the bonds so secured shall have been so purchased and retired by the City and cancelled by the Trustee, and the mortgage discharged, the same shall—regardless of the price at which the bonds were purchased by the City—operate as payment in full of said deferred installment of the purchase price ($16,500,000), and the interest thereon shall then cease. The Company shall give the City, from time to time, all information that it has or by due diligence can acquire to enable the City to locate the holders of such bonds and facilitate the negotiations for the purchase thereof. Upon and after the making of the initial payment of Fifteen million dollars ($15,000,000) hereunder, the Company shall turn over to the Street Railway Commission all offers for the sale of any of said bonds that it may from time to time receive, except that this shall not apply to such amount of bonds as may be necessary to be deposited to procure the release of any certificates of indebtedness that may be deposited under the provisions of Paragraph (a) hereof.

In case the City is unable to make the initial payment of Fifteen million dollars ($15,000,000) herein provided for at the time provided because of litigation or because of legal obstacles arising therefrom, the time for such payment shall be extended for a reasonable period not exceeding ninety (90) days after July 1, 1919; provided that such time may be further extended by mutual agreement between the parties, and during such period of extension the relative positions between the parties hereto in reference to this agreement shall remain the same. In the event of the City being unable to perform this agreement as to payment of Fifteen million dollars ($15,000,000) on the delivery of the conveyance of the property to be conveyed

hereunder by reason of litigation, the city shall not be liable for any damages or claims on account of such non-payment.

Second: At all times until said purchase price shall be fully paid, to maintain said property and all additions thereto and extensions thereof and betterments thereof and all equipment and property now or hereafter purchased, used in connection with the operation thereof, in as good repair and in at least as high a state of efficiency as is the property hereby purchased at the time of delivery thereof to the City, and to operate said property, with the extensions and additions thereto, as a street railway system.

The City may abandon or remove trackage which by reason of shifting population and the like becomes useless or unprofitable, and may make any other changes in trackage that may seem desirable, for the betterment of the system and the service, upon obtaining the consent of the Trustees of the mortgages covering the property affected, whenever by the terms of the mortgage such consent is necessary.

Third: Upon delivery of possession of the property in said Schedule "A" described, to take over and pay for in cash, at its then fair market value, all materials, supplies and uninstalled machinery useful and needful for use within a reasonable time for the maintenance and operation of said City street railway system, which the Company may have on hand at the date of delivery to the City of possession of said property—said machinery, material and supplies not being a part of the property described in said schedule and the price thereof to be in addition to the purchase price above stated.

THE COMPANY AGREES:

To sell and convey to the City the property herein agreed to be purchased, including all franchises and other rights in the streets within the now existing exterior limits of said City at the price and on the terms and conditions herein set forth and to deliver possession thereof to the City upon the payment of said Fifteen Million Dollars ($15,000,000) of the purchase price, reserving, however, a lien, for the unpaid balance of said purchase price and interest, upon all of said property and all extensions and additions thereto and betterments thereof, and all equipment and property used in connection therewith until the full payment of the balance of said purchase price as herein provided. Such conveyance shall contain the usual covenants of title and of warranty and transmit a good merchantable title entirely freed from all liens, debts, damages and liabilities, including suits or claims for personal injuries, excepting the mortgage liens aggregating Sixteen Million Five Hundred Thousand Dollars ($16,500,000) hereinafter mentioned, payment of which by the City shall be deemed satisfaction and discharge of the deferred payment of the purchase price and the lien created hereby for the balance of the purchase price of the property so to be conveyed. A schedule of the mortgages so aggregating Sixteen Million Five Hundred Thousand Dollars ($16,500,000) is hereto attached marked Schedule "B." The Company shall also furnish full and complete abstracts of title of all real estate to be conveyed hereunder. It is understood that no part of any extension or addition to said railway system made by the City is to be subject to the lien of any mortgage or mortgages heretofore or hereafter made

by the Company, but shall be subject to the lien created hereby for said unpaid balance of the purchase price. The Company from the date hereof until the actual delivery to the City of possession of the property to be conveyed hereunder shall maintain all such property in as high a state of efficiency and repair as the same is in at the date hereof, reasonable wear and tear excepted.

IT IS MUTUALLY AGREED BY AND BETWEEN THE PARTIES AS FOLLOWS:

(a) Upon the making of said Fifteen Million Dollar payment to be made concurrently with the conveyance and transfer of possession to the City of the property hereby agreed to be conveyed, the Company shall cause to be cancelled all bonds secured by mortgage constituting a lien against said property or any part thereof, except an aggregate of Sixteen Million Five Hundred Thousand Dollars ($16,500,000) face value of said bonds. If at the time of such conveyance and payment it shall be impracticable to obtain a cancellation of all such bonds except said Sixteen Million Five Hundred Thousand Dollars ($16,500,000), face value thereof, the Company shall concurrently with making the initial payment of Fifteen Million Dollars ($15,000,000), deposit with the Central Union Trust Company of New York City an amount of United States Certificates of Indebtedness, the face value of which shall equal the difference between the face value of all outstanding bonds and Sixteen Million Five Hundred Thousand Dollars ($16,500,000). Said Trust Company shall promptly collect all principal and interest due on the maturity of any such United States Certificates of Indebtedness so deposited with it and promptly re-invest the principal of the sum in other such Certificates bearing not less than four and a half per cent (4½ per cent) interest. If no such Certificates can be obtained then such Trust Company shall reinvest such principal money in any other securities that may be approved by the City and the Company. The Trust Company shall pay the Company the interest accruing and collected upon such Certificates or other securities referred to for the purpose of providing for the payment of the interest upon the outstanding bonds in excess of said Sixteen Million Five Hundred Thousand Dollars ($16,500,000), against which said Certificates of Indebtedness are to be deposited, and said Company shall therewith pay any coupons upon any such bonds outstanding against which said Certificates are so deposited, as they mature. After the deposit of said Certificates with said Trust Company such Certificates shall be released from time to time from such deposit and delivered to the Company on its depositing with said Trust Company of certificates of the Trustee of the cancellation of the mortgage bonds, and all appurtenant unpaid coupons—liens against said property in sums of not less than Ten Thousand Dollars ($10,000), or some multiple thereof, and the release of the certificates to be par for par of the bonds so certified to have been cancelled.

If at the time of the conveyance and delivery of possession of the property sold hereby there shall be outstanding any of the bonds listed in Schedule "B" as "Detroit Railway First Mortgage 5's" or "Detroit, Fort Wayne and Belle Isle Railway First Mortgage Five Per Cent Bonds," the Company shall deposit Certificates of Indebtedness as aforesaid of a face value equal to the face value of all of the bonds of said two issues last mentioned then outstanding and the aforesaid right to release of Certificates of Indebtedness shall not be exercisable in respect of said amount of Certificates except on the deposit as aforesaid of the certificates of the Trustee of one of said two mortgages particularly mentioned of the cancellation of bonds secured by such mortgage. Such certificates of indebtedness shall be deposited and collected and proceeds reinvested and disposed of in the same manner as provided with reference to the other certificates of indebtedness referred to in this subdivision (a)

(b) The City does not agree to make itself and shall not be personally liable to pay the balance of the purchase price ($16,500,000), the payment of which is deferred, or the interest thereon; but, to secure such payment, the Company, its successors and assigns, shall have and is hereby given and shall solely look to a first lien, for the unpaid amount of said purchase price, and for all interest thereon, upon said street railway system, and property hereby agreed to be conveyed to the City, and upon any and all extensions and additions thereto and betterments thereof, and upon all equipment and property obtained for use in connection therewith by the City, subject only to the bonds that are now outstanding and secured by mortgages upon said street railway system. All interest moneys paid by the City shall be applied by the Company, so far as necessary in payment of the interest on said last mentioned mortgage bonds as such interest shall mature. At the time the City shall make each interest payment, the Company shall present the certificate or certificates of the mortgage Trustees showing payment of all bond interest theretofore matured. If on December 31, 1931, the date for the payment of said Sixteen Million Five Hundred Thousand Dollars ($16,500,000), there are still outstanding any of said bonds secured by mortgage, the City may make payment of said Sixteen Million Five Hundred Thousand Dollars ($16,500,000), by delivering any of said bonds to the Guaranty Trust Company of New York City and paying in cash to said Trust Company the difference between the face amount of the bonds so delivered and said Sixteen Million Five Hundred Thousand Dollars ($16,500,000), which moneys shall by said Trust Company be applied so far as necessary to the payment of all of said mortgage bonds then remaining unpaid. Upon such payment such bonds shall be cancelled, and the mortgage securing the same shall be released and discharged so as to free the property agreed to be conveyed hereby from the lien thereof. This agreement is made upon the understanding that all the mortgage bonds hereinbefore mentioned will have matured on the first day of January, 1932, and that the principal of the total of said mortgage indebtedness does not in the aggregate exceed Sixteen Million Five Hundred Thousand Dollars ($16,500,000), and that no interest thereon is in arrears.

(c) In the event of default in payment of any installment of interest upon said unpaid purchase price, or any part thereof, or in the payment of the unpaid portion of said purchase price at the time and in the manner hereinbefore provided, and the continuance of any such default for six months, said Company, its successors or assigns, may (1) through any lawful agency take possession of the property hereby conveyed and all extensions thereof and additions thereto and betterments thereof and of all equipment and property used in connection therewith, and may operate or cause the same to be operated, applying the net proceeds of such operation upon said unpaid indebtedness, until such time as the City shall pay all amounts in default, or it may (2) foreclose said lien by any lawful method

and have the right to the appointment of a receiver forthwith upon the institution of such foreclosure proceedings.

(d) Upon and after the conveyance and delivery of possession of the street railway system and property hereby agreed to be conveyed to the City, the connections thereof with all interurban tracks shall be continued and the company, its successors and assigns, may continue the operation over said system of passenger, freight and express cars of all interurban lines owned or controlled by it, including all necessary construction and repair cars, between its passenger and freight terminals and the exterior limits of the city line, provided always, that the operating, routing and rerouting of such interurban cars over the city system shall be under the reasonable supervision, direction and control of the Board of Street Railway Commissioners of the City. All persons employed in the operation of said interurban cars and the care thereof while on the city system shall be provided and paid by the Company. The Company shall maintain such interurban cars and other equipment in a safe and serviceable condition for such operation. The City shall provide all power necessary for such interurban car operation while on the City system, provided, however, that the City shall not be liable for shortage of power caused by strikes, lockouts, breakdowns or other causes beyond its control; and shall provide for all claims for injuries or damages resulting from the operation of such interurban cars thereon.

The City shall be compensated therefor and for the use made by such interurban cars of the system upon the following basis:

The Company shall pay the City monthly such proportion of the "Operating Expense," chargeable to "Ways and Structures," "Power" and "Injuries and Damages," as those terms are defined and classified by the Interstate Commerce Commission (accounts for which shall be kept in accordance with the accounting practices prescribed by said Commission) as the car mileage run by all of said interurban cars over said City railway system shall bear to the total car mileage thereon, and in addition thereto an amount equal to thirty per cent (30 per cent) of the proportion of said "Operating Expense" so ascertained. The right of the Company to use the city lines for its interurban cars may at the option of the City be suspended or terminated, whenever the Company is in default for one calendar month in the payment of its proportion of any of the aforementioned "Operating Expense" chargeable to "Ways and Structures," "Power" and "Injuries and Damages," or of the thirty per cent (30%) of the aggregate thereof in addition thereto, or of any sum that shall hereafter be fixed for such "Operating Expense," and profit, after a bill therefor has been received by it, provided, if any such bill so rendered and received by it shall in good faith be disputed or contested such calendar month shall not commence to run until such dispute or contest shall be finally determined.

In case of disagreement between the parties (1) at the end of any five-year period, commencing from the delivery of the possession to the City of the system and property hereby agreed to be conveyed, as to the amounts, either of the total car mileage or interurban car mileage or as to the proper amount of the items "Ways and Structures," "Power" and "Injuries and Damages," or as to the percentage of profit over and above any

and all of the aforementioned "Operating Expense" chargeable to "Ways and Structures," "Power" and "Injuries and Damages," in the last preceding paragraph mentioned, determined on the basis and in the manner in said paragraph provided, or upon such other basis as may be determined in the method hereinafter provided to be reasonable and just, or (2) in case of any disagreement at any time and from time to time as to the reasonable supervision, direction and control of such interurban traffic over said city system, either the City or the Company may bring such disagreement before the Michigan Railroad Commission or any agency of the State from time to time existing, having jurisdiction of the regulation of street or interurban railway companies, and the same shall be determined by such commission after giving notice and opportunity of hearing to the other party.

Whenever in the future, by reason of increased traffic or changed conditions, or congestion of the streets of the City, it may become necessary in the interest of the public to restrict or change the operation or routes of interurban cars over the City system, such needful restrictions or changes shall be effected, and if the parties are unable to agree with reference thereto the matter in dispute or in controversy between them shall be referred to and determined by the Michigan Railroad Commission, or such other State agency having jurisdiction to regulate street or interurban railways.

If at any time when disagreement, dispute or controversy mentioned in the last two preceding paragraphs shall arise, there shall be no Railroad Commission or other such State agency or if such Commission or State agency refuse to act, such matters in dispute or in controversy shall be determined by arbitration as follows:

The arbitrators shall be selected in the following manner, to-wit: The City shall select one and the Company shall select one, and the two thus chosen shall select a third, and the persons thus chosen, after a full hearing and examination of the matter in dispute, shall within thirty (30) days after final submission determine the same in writing, and the decision of the majority of the three persons thus chosen shall be final. If either party shall neglect or refuse to appoint an arbitrator on its own part within ten days after receiving written notice from the other of its appointment of an arbitrator on its part, the arbitrator so appointed by the party giving such notice may select a disinterested person to act as another arbitrator for and on account of the party so notified and refusing or neglecting to appoint an arbitrator on its part, and the two thus chosen shall select a third. If the two so chosen by either of the methods above provided for, within ten days after their appointment shall be unable to agree upon a third arbitrator or shall fail to agree upon a third arbitrator, then and in that event either party hereto shall and may notify the Presiding Judge of the United States Circuit Court of Appeals for the Sixth Circuit of such fact, and he or such person as he may designate shall appoint said third arbitrator. The decision and award of the arbitrators as herein provided or any two of them shall be binding and conclusive upon the parties hereto with respect to the matters so submitted to and decided by said arbitrators. If any arbitrator appointed by either of the parties hereto shall neglect or fail to act, notice of such failure shall be served upon the party appointing such arbitrator by the other party , and in case such party shall fail to appoint another arbi-

trator or shall fail to cause the arbitrator so appointed to act and such failure shall continue for a period of ten days, the arbitrator appointed by the other party shall thereupon name a person to act as an arbitrator on behalf of the other party, and the two thus chosen shall select a third, and the decision and award of such arbitrators or any two of them shall be binding and conclusive upon said parties hereto with respect to the matters so submitted to and decided by the said arbitrators. The award and decision of the arbitrators under the provisions hereof shall be served by them or some of them upon the parties hereto within ten days after the time when such arbitrators shall make their award, which award and decision shall be signed by said arbitrators. Each of the parties hereto shall bear one-half of the expense of such arbitration.

When the property is delivered to the City as herein provided, the Company shall simultaneously deliver all books, records, documents, literature, data relating to the management and operation of the railway system and property hereby agreed to be conveyed and useful and proper for the operation and management thereof.

Upon the execution of this agreement and the delivery of possession of the property hereby agreed to be conveyed, all pending suits and actions and alleged causes of action between the parties shall be thereby settled, released and discharged, and the City shall withdraw or cause to be discontinued all pending complaints and suits for the violation of ordinances.

Neither the City nor the Company shall issue transfers for transportation of passengers over lines or on cars of the other party, and the Company shall not be required to carry, and so far as it can reasonably avoid shall not carry, any local passengers on interurban cars over the City Railways, it being the understanding that such interurban passenger cars shall carry only passenger traffic originating in the City destined for points beyond the City limits and passenger traffic originating outside said limits coming into the City.

In witness whereof, the City of Detroit has caused these presents to be executed by the President and Secretary of the Board of Street Railway Commissioners and the Detroit United Railway has caused its name to be set and its corporate seal to be affixed by its President and Secretary, pursuant to resolutions of its stockholders duly adopted at a meeting heretofore held and of its Board of Directors duly adopted at a meeting of said Board on the seventeenth day of March, 1919.

CITY OF DETROIT.
ABNER E. LARNED,
President of Board of Street Railway Commissioners.
EDWARD T. FITZGERALD,
Secretary of Board of Street Railway Commissioners.
DETROIT UNITED RAILWAY.
F. W. BROOKS,
President.
A. E. PETERS,
Secretary.

Signed, Sealed and Delivered in the presence of
JAMES COUZENS,
OTTO KIRCHNER,
ELLIOTT G. STEVENSON,
CHAS. A. DRUMMOND.

STATE OF MICHIGAN,
COUNTY OF WAYNE (SS).

On this 17th day of March, 1919, before me appeared Abner E. Larned and Edward T. Fitzgerald, to me personally known, who being by me duly sworn, did each say that the first named is the President and the last named is the Secretary of the Board of Street Railway Commissioners of the City of Detroit, and that said instrument was signed and sealed in behalf of said corporation by authority of said Board of Street Railway Commissioners, and the said Abner E. Larned and Edward T. Fitzgerald each acknowledged said instrument to be the free act and deed of said corporation.

ALVIN B. HICKS,
Notary Public, Wayne County, Mich.

My commission expires Sept. 9, 1919.

STATE OF MICHIGAN,
COUNTY OF WAYNE (SS).

On this 17th day of March, 1919, before me appeared Frank W. Brooks and A. E. Peters, to me personally known, who being by me duly sworn, did each say that the first named is the President and the last named Secretary of the Detroit United Railway, and that the seal affixed to said instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its Board of Directors, and the said Frank W. Brooks and A. E. Peters each acknowledged said instrument to be the free act and deed of said corporation.

ALVIN B. HICKS,
Notary Public, Wayne County, Mich.

My commission expires Sept. 9, 1919.

The Charter Amendment

The proposed charter amendment submitted by the Street Railway Commission and mentioned in the communication from that commission at this session was then read by the clerk, as follows:

Be It Resolved, That this body, being the legislative body of the City of Detroit, by a three-fifths vote of the members elect, propose an amendment to Chapter 13 of Title IV of the Charter of the City of Detroit by adding thereto a section to be known as Section 23, for the purpose of authorizing the Board of Street Railway Commissioners of the City of Detroit to make a contract for the purchase of a public utility; and

Be It Further Resolved, By this body, by a three-fifths vote of the members-elect, that said amendment be in form, words and figures as hereinafter set forth, and that said amendment be printed and submitted to the qualified electors of the City of Detroit, male and female, at an election to be held in said city on April 7, 1919, in the following form, words and figures:

A Bill to amend Chapter 13 of Title IV of an Act entitled "A Bill (an Act) to provide a Charter for the City of Detroit and to repeal Act No. 326 of the Local Acts of the year 1883, entitled 'An Act to provide a Charter for the City of Detroit and to repeal all special acts relating to the city except such as no city may alter, amend or repeal, in conflict with any provisions of this Charter (which charter of the City of Detroit was adopted by the electors of said city at an election held June 25th, 1918, pursuant to the provisions of Act No. 279 of the Public Acts of 1909, as amended)'" by adding thereto a section to be known as Section Twenty-three (23).

THE PEOPLE OF THE STATE OF MICHIGAN AND THE PEOPLE OF THE CITY OF DETROIT ENACT:

Section 1. That Chapter XIII of Title Four (4) of an Act entitled "A Bill to provide a Charter for the City of Detroit and to repeal Act No. 326 of the Local Acts for the year 1883 entitled 'An Act to provide a Charter for the City of Detroit and to repeal all special acts relating to the City, except such as no city may alter, ~~amend~~ or repeal, in conflict with any provisions of this Charter (which Charter of the City of Detroit was adopted by the electors of said city at an election held June 25, 1918, pursuant to the provisions of Act No. 279 of Public Acts of 1909, as amended)'" be and the same is hereby amended by adding thereto Section Twenty-three (23), so as to read as follows:

Section 23. Said Board is hereby authorized and empowered to make a contract or contracts upon such terms, including terms of present or deferred payment, and upon such conditions and in such manner as it may deem proper to acquire, own, operate and maintain a public utility system for supplying transportation to the city and the inhabitants thereof. If a contract be made for the purchase or acquiring of the existing transportation system in the city and within a distance of ten miles from any portion of its limits, then said Board may, for the purpose of acquiring it, pay down in cash whatever amount may be agreed upon as the initial payment of the purchase price, the remainder or balance of the purchase price agreed upon to become and remain a lien upon the property so purchased or

acquired until paid and discharged and the contract may so provide. Said Board may also, with the consent of the Common Council, issue the public utility bonds of the city in such amount, not exceeding the amount that the city may legally issue and not to exceed Twenty-four million dollars ($24,000,000), (which amount is approximately a little less than two per cent of the assessed valuation of the real and personal property of the city), and in such denomination, bearing such rate of interest, and maturing at such time, not exceeding thirty (30) years from the date of issue, as the Board may determine, for the purpose of securing money with which to make the first or initial payment as provided in such contract for the property, and also for the purpose of providing the means or money with which to build extensions and make additions and betterments and to procure machinery, material and supplies for said street railway system so purchased or acquired. Said Board may, for the purpose of meeting the payment and retiring the bonds so issued, provide a sinking fund into which sufficient of the earnings of the said railway shall be placed in order to pay the principal and interest of bonds so issued at maturity and to provide the means or money with which to pay the remainder of the purchase price of said railway system on or before December 31, 1931, to the end that the entire cost of said transportation system shall eventually be paid from the earnings thereof; Provided, That in no event and under no circumstances shall the city be personally liable for more than two per cent (2%) of the assessed valuation of its real and personal property for the purchase of such transportation system. Provided further: That no contract for the purchase of the existing public transportation utility system in said city shall be binding upon the City unless the proposition thereof shall have first received the affirmative vote of three-fifths (3/5) of the qualified electors, male and female, voting thereon at any regular or special election held in said City.

The powers in this section contained and conferred shall be in addition to the powers provided in the other sections of this chapter not inconsistent herewith, and the exercise thereof shall not impair or affect the right to exercise any of the powers in the other sections of this chapter.

Said Board shall cause to be performed all the duties and obligations imposed by said contract, in case it is approved by the electors and aforesaid.

Any provision of this Charter inconsistent with the provisions of this Chapter shall not be construed as limiting the power provided for in this Chapter. Any proposition submitted under the provisions of this Chapter may be submitted to the electors by resolution of the Common Council.

All Acts or parts of Acts inconsistent herewith are hereby repealed.

Do you favor the above amendment?

Yes ( )

No ( )

Schedule "A"

The Detroit United Railway and the Detroit and Highland Park R. R. Co. convey to the City of Detroit all right, title and interest of every kind and nature, including real estate, tracks, rights of way and trackage rights in and to the following generally described properties in the City of Detroit, the City of Highland Park and the Village of Hamtramck, and Warren

township, Macomb county, as their boundaries are fixed as of March 17, 1919, and also certain tracks, rights of way and trackage rights outside said city and village limits, and now owned by said Companies for the operation of the city car lines, as at present routed and run, with the exception of certain items specifically mentioned and hereinafter specified as omitted. The intention of the parties hereto being to sell, convey and deliver on the one hand and to purchase and acquire on the other hand, the existing City System as now owned and operated by the Detroit United Railway (except the Grosse Pointe Line and the Wyandotte Division), together with the complete tracks, rights of way, franchise rights, leaseholds, power contracts, trackage rights and equipments used or useful in the operation of said City system as a whole as operated by the Detroit United Railway as of March 17, 1919.

The following classes of property and equipment are enumerated to designate the general character of the property to be conveyed, and as a basis for a full detailed inventory to be made as of the date of actual transfer of title. It is understood that the specific description contained in this schedule or its appendices shall not limit or qualify the words of general description contained in the contract to which this schedule is attached.

Item 1—Rights of Way

All rights of way and easements and franchise rights of all kinds, such as: Underground for water, air, sewage, oil, gas, steam, electric transmission and distribution, telephone, telegraph, signal lines, feeders; on the surface for track, highways or footways; overhead for feeders, trolley, transmission lines, telephone, telegraph, signal lines, distribution lines; except those specifically retained as shown in Appendix "A," annexed hereto. The rights of way to be conveyed are tentatively listed in Appendix "A."

Item 2—Lands

All lands used or useful in electric railway operation, and also all lands now owned by the Detroit United Railway, and Detroit and Highland Park R. R. Co., whether or not used or useful, except those lands specifically retained and which are listed in Appendix "A," annexed hereto, and said lands to be conveyed to the City also are tentatively listed in Appendix "A," annexed hereto.

Item 3—Grading, Ballast, Ties, etc.

All grading, embankment, ditches, drains, retaining walls, riprap, ballast of all kinds, concrete foundations, concrete roadway, and ties of all kinds; it being the intention hereof to convey all surface and subsurface work of this character as the same now stands.

Item 4—Rails, Rail Fastenings and Joints

All rails and rail fastenings, such as spikes, tie plates, bolts, fishplates and other material for both revenue and non-revenue track, such as car barns, power station, yards, shops, switches, sidings, wyes, loops, etc. The total track mileage applying to this item is set forth in Appendix "B," annexed hereto.

Item 5—Special Work

All track special work applying to the track herein conveyed consisting of steam and street railway crossings, crossovers, curves, frogs, runoffs, switches, switch mate, turnouts, guard rails used in connection therewith.

Item 6—Paving

All paving and its accessory foundations, about tracks, special work, crosswalks, streets, alleys and elsewhere.

Item 7—Roadway Machinery and Tools

All roadway machinery and tools, including small tools in use, used in the construction and maintenance of the railway property, and shop tools.

Item 8—Tunnels and Subways

All tunnels and subways, including apparatus for ventilating and lighting and safety appliances.

Item 9—Bridges, Trestles and Culverts

All bridges and trestles over streams, ravines, marshes, streets and other railways, including abutments, piers, supports, draw and pier protection; wing dams and cribs, ice breakers, machinery to operate drawbridges; culverts and culverts for drainage system.

Item 10—Crossings, Fences and Signs

All construction for street, road and farm crossings at grade; overhead bridges and viaducts, roadways of undergrade footways, wagon roads or cattle crossings, crossing gates, cabins and towers, warning signals, right of way fences, snow and sand fences, cattle guards, warning and other railway signals.

Item 11—Signals and Interlocking Apparatus

All signal and interlocking apparatus, including towers and other buildings incident thereto.

Item 12—Telephone Lines

All telephone lines, including conduits, poles, cables, wires, booths and instruments, excepting the telephone dispatching lines and appurtenances thereto used only for the dispatching and other business of the owned and controlled interurban lines.

Item 13—Poles and Fixtures

All pole lines and structures; including poles, cross arms, insulator pins, brackets and other pole fixtures, braces and other supports for holding poles in position, and structures for supporting the overhead electrical construction.

Item 14—Underground Conduits

All conduits for underground wires and cables, including manholes, sewer connections, sewer traps, and all fixtures.

Item 15—Distribution System

All overhead and underground feeders for low tension power from power stations and substations, with insulators and connections; track bonding, overhead trolley lines, including trolley wire, guard, span, strain, supplementary and other wires and catenary construction.

Item 16—Shops and Car Houses

All shops, car sheds, car houses, oil houses, sand houses and storehouses, pits, transfer tables, turntables, and built-in scales; heating and lighting apparatus; water, gas, and sewer pipes and connections. The foregoing are listed in part in Appendix "C," annexed hereto.

Item 17—Stations, Miscellaneous Buildings and Structures

All stations, waiting rooms and other buildings not provided for elsewhere.

Item 18—Wharves and Docks

All wharves, docks, slips and other landings for vessels, machinery and other apparatus on docks and wharves; piling, pile protection cribs, cofferdams, and protection of docks.

Item 19—Other Ways and Structures

All other ways and structures not included in any of the foregoing items.

Item 20—Passenger and Combination Cars

All passenger, baggage, parlor, chair, combination passenger service and private cars, including bodies and trucks and all fixtures and appliances inside of or attached to the car body or trucks. The foregoing are listed in part in Appendix "D," annexed hereto.

Item 21—Freight, Express and Mail Cars

All freight, express and mail cars, including bodies and trucks and all fixtures and appliances inside of or attached to the car body or trucks. The foregoing, if any, will be listed in Appendix "D," annexed hereto.

Item 22—Service Equipment

All water cars, sprinkler cars, sand cars, salt cars, supply cars, maintenance of way and line cars, snow plows, sweepers, scrapers and miscellaneous snow-handling equipment, pile-drivers, rail grinders, cranes, welding and bonding apparatus and similar equipment, cupolas and locomotive cranes. The foregoing are listed in part in Appendix "D," annexed hereto.

Item 23—Electric Equipment of Cars

All electric motive equipment and wiring of cars. The foregoing are listed in part in Appendix "D," annexed hereto.

Item 24—Locomotives

Locomotives, including apparatus and fixtures and the necessary electrical equipment. The foregoing are listed in part in Appendix "D," annexed hereto.

Item 25—Shop Equipment

All machinery and tools used in shops and car houses, such as stationary engines and boilers, motors, compressors, shafting, belting, cranes, forges, portable scales, conduits and fixtures conveying compressed air, machine tools and other machinery and tools.

Item 26—Furniture

All movable furniture and fittings for shops, power plants and substation buildings, stations, waiting rooms and offices.

Item 27—Miscellaneous Equipment

All equipment of general stables, including horses, harness, drays, wagons, automobiles, and other vehicles, all repair shops, testing laboratories. Compressed air plant for air brakes. The foregoing are shown in part in Appendices "A," "C," "F," and "G."

Item 28—Power Plant Buildings

All power generating plants, including drainage, gas, sewer and water pipes and connections and fixtures, grading and fencing, coal trestles and pockets, wells, pipe lines to supply water for steam plant. The foregoing are listed in part in Appendices "A," "C," and "H."

Item 29—Substation Buildings

All buildings used as power substations or storage battery buildings, including drainage, gas, and water pipes and connections, grading, improving and fencing grounds. The foregoing are listed in part in Appendices "A," "C," and "H," annexed hereto.

Item 30—Power Plant Equipment

All engines, boilers, pumps, condensers and equipment for generating steam power; dynamos, generators and turbines; wiring and appliances and other equipment for generating electric current. Traveling cranes, switchboards and fixtures and appliances connected therewith. The foregoing is listed, in part, in Appendix "I," annexed hereto.

Item 31—Substation Equipment

All boilers, storage batteries, transformers, rotary converters, switchboards, motor generator sets, switchboards and fixtures and appliances connected therewith, and equipment for portable substations. The foregoing are listed in part in Appendix "J," annexed hereto. Also all Detroit United Railway substation apparatus, equipment, switchboards, etc., in the substation buildings of the Detroit Edison Company. This latter property is listed, in part, in Appendix "J," annexed hereto.

Item 32—Transmission System

All poles, fixtures and conduits, cables, wires, insulators, and insulating material.

It being understood that the classifications above set forth include some species of property that are not owned by the companies, and that the intention is that the companies shall convey to the City all property owned by

said companies, or either of them, falling under said classes, with the exceptions herein specified.

All of these Appendices are believed to be substantially correct but have not been verified.

Appendix "A"

LAND

LOCATION OF VARIOUS PARCELS OF REAL ESTATE OF THE DETROIT UNITED RAILWAY WITHIN THE PRESENT (MARCH 17th, 1919) CITY LIMITS OF THE CITY OF DETROIT

Parcel No.	Description and Location
*1	Former General Offices, 12 Woodward Avenue.
3	Power Station "A," North Side of Atwater near Riopelle.
4	Clark Car Storage and Wye, West Side of Clark near Wabash R. R.
5	Power Station "B," S. W. Corner of Atwater and Riopelle.
*7	Interurban Station and General Offices, on Jefferson, Bates and Woodbridge.
*8	Residence, N. W. Corner West Jefferson and Traver.
9	Power Dept. Headquarters, S. E. Corner of Woodbridge and St. Antoine.
10	Car Clearance, S. E. Corner of W. Fort St. and Dearborn Avenue.
11	Residence, S. W. Corner of E. Fort St. and Dequindre.
*12	Vacant, S. E. Corner of Lexington and Carter.
13	Residence, S. E. Corner of E. Fort St. and Dequindre.
14	Baker Car House, S. W. Corner of Dix and Dragoon.
15	Residence, N. W. Corner of E. Fort St. and Dequindre.
*16	Residence, E. S. of Infantry, south of Dix Ave.
17	Residence, N. E. Corner of E. Fort St. and Dequindre.
18	Track Location, S. W. Corner of Toledo and Clark Aves.
*19	Interurban Car House, Monroe, Macomb, Dequindre and St. Aubin.
*20	Business Property, N. E. Corner of Michigan and Huron Ave.
*21	East Side Freight Terminal, Monroe, Macomb, St. Aubin and Chene.
*22	Business Property, N. W. Corner of Michigan and Huron.
*23	Vacant, S. W. Corner of Champlain and Helen.
*24	Business Property, Grand River, Myrtle, Trumbull and Sycamore.
*25	Business Property, N. W. Corner of Jefferson and Hibbard.
26	Michigan Car House, Michigan and Welch Avenues.
27	Jefferson Car House and Yards, Jefferson and St. Jean Avenues.
28	Air Charging Station, S. Side of Forest, near Wabash.
29	Kercheval Car House, N. W. Corner of Kercheval and Concord Aves.
30	Battery Station "L," Hancock Ave., between Third and Fourth Aves.
*31	Business Property, S. W. Corner of Chene and Hunt.
32	Michigan Car House Addition, West Side of Military Avenue, near Michigan.
*33	Superior Freight Yards, Superior and Gratiot Avenues.
34	Warren Car House, Warren and Lawton Avenues.
35	Brush Car House, N. E. Corner of Russell and Ferry.

36	Warren Ave. Car Yard, S. E. Corner of Warren and Lawton Avenues.
37	Track Dept. Shops, Harper Ave. and M. C. Belt Line R. R.
38	Office and Compressor Station, N. W. Corner of 14th and Warren Aves.
39	Track Dept. Yards and Headquarters, S. E. Corner of Harper and Mt. Elliott Avenues.
40	Trumbull Car House, Trumbull Ave. and M. C. R. R.
42	Third Car House, S. W. Corner of Holden and Greenwood.
45	Leesville Car House, N. W. Corner of Gratiot and Harper.
46	Loop and Air Compressor, Fort St., West of Dearborn.
47	Chene Loop, Jos. Campau Ave., and M. C. R. R.
48	Battery Station "K," S. W. Corner of Woodward and Cortland Aves.
49	Air Compressor Station, N. E. Corner of Goodwin and Woodland.
50	Woodward Car House and Highland Park Shops, Woodward Ave., Hamilton Blvd. and Detroit Terminal.
51	Trombly Sub-station, N. E. Corner of Trombly and Dubois.
52	West Jefferson Car House, West Jefferson, between Ansbach and River Rouge.
53	Mack Avenue Loop, Mack Ave., between Gilbert and Hart.
54	Dix Car House, N. W. Corner of Dix and Livernois Aves.
55	Steam Railroad Connections, Jefferson Ave. and Detroit Terminal R. R.
56	Grand River Loop and Storage Yard, Grand River and Mackinaw Aves.
57	Clay Ave. Freight Terminal, Clay Ave. and Grand Trunk R. R.
58	Track Location, N. W. Corner 22nd and Porter.
59	Wayburn Loop, Jefferson and Wayburn Aves.
*60	Addison Wye, N. W. Corner of Michigan and Homedale.
61	Private Right of Way, on Clay Ave., west of Jos. Campau.
62	Private Right of Way, on Webb, Oakman and Metzger Aves.
63	Private Right of Way, between Carpenter Road and Davison Road.
*64	West Side Freight Terminal, W. Fort, Lafayette, 15th and 17th Sts.
65	North Detroit Car House, Mt. Elliott and Nevada.
68	Private Right of Way, Ferndale Line, Detroit & Highland Park R. R.
70	Private Right of Way, Northwestern Belt, Detroit & Highland Park R. R.

Of the foregoing, the Parcels marked with an asterisk (*) are to be retained by the Company, and are as follows, viz.:—

*	Former General Offices, 12 Woodward Avenue.
*7	Interurban Station and General Offices, on Jefferson, Bates and Woodbridge.
*8	Residence, N. W. Corner of W. Jefferson and Traver.
*12	Vacant, S. E. Corner of Lexington and Carter.
*16	Residence, E. S. of Infantry, south of Dix Axenue.
*19	Interurban Car House, Monroe, Macomb, Dequindre and St. Aubin.
*20	Business Property, N. E. Corner of Michigan and Huron Avenues.
*21	East Side Freight Terminal, Monroe, Macomb, St. Aubin and Chene.
*22	Business Property, N. W. Corner of Michigan and Huron Aves.
*23	Vacant, S. W. Corner of Champlain and Helen Aves.
*24	Business Property, Grand River, Myrtle, Trumbull and Sycamore.
*25	Business Property, N. W. Corner of Jefferson and Hibbard Avenues.
*31	Business Property, S. W. Corner of Chene and Hunt Sts.
*33	Superior Freight Yards, Superior and Gratiot Avenues.

†*50 Woodward Ave. Freight Terminal, 106 feet, more or less, on Woodward, 199 feet more or less along D. T. R. R. property on north side, 145 feet more or less on south side parallel to D. T. R. R. property and 118 feet more or less on rear of this freight terminal lot.
*57 Clay Ave. Freight Terminal, Clay Avenue and Grand Trunk R. R.
*60 Addison Wye, N. W. Corner of Michigan and Homedale.
*64 West Side Freight Terminal, W. Fort, Lafayette, 15th and 17th Sts.

† NOTE—This land is a part of Parcel 50, as shown on page 3.

Appendix "B"

TRACK

The tracks and right of way, which are to be transferred and title conveyed to the City of Detroit under this agreement, include all the tracks owned by the Detroit United Railway and the Detroit and Highland Park Railway within the City Limits of the City of Detroit, and in the City of Highland Park and in the village of Hamtramck, as their corporate limits existed March 17th, 1919, except as specifically described hereafter. Also there is included outside the City Limits of Detroit:

(a) The Center Line Road tracks, from the Detroit City Limits to the terminus of said lines.

(b) The portions of the Detroit and Highland Park Railway outside the City Limits, including private right of way (owned by the Detroit and Highland Park Railway).

(c) The tracks in the State Fair Grounds on Woodward Avenue, which are on rights of way held under a lease by the Detroit United Railway, and which lease is transferred to the City by this agreement.

(d) The tracks and private rights of way of the Detroit and Highland Park Railroad from the City Limits on Ferndale Avenue to the City Limits on Dearborn Avenue, including tracks and private rights of way to the Ford Blast Furnace Plant.

For more specific limitation, and purposes of fuller identification in drawing a detail description upon final transfer of property, the points of separation between the City ownership and the Detroit United Railway, or its subsidiaries, may be thus defined. These limits are placed on the following streets as the points where the City system ends:

(a) **West Jefferson Ave.:** The two tracks in the street to the center of River Rouge.

(b) **West Fort Street:** Two tracks to a point about 200 feet west of the intersection of the center line of Dearborn Avenue and center line of West Fort Street. The right to operate City cars is, however, granted to the City by the Detroit United Railway, in behalf of the D. M. & T. Co., (a subsidiary), for an annual rental of $1.00, along West Fort Street beyond said defined limit so as to allow the City to run its Fort Street cars around the Wye or loop to a point about 640 feet west of said intersection of West Fort Street and Dearborn Avenue.

The City and D. M. & T. are to have joint use of these leased portions of track, the City to make all repairs and replacements at its own expense to said portions of tracks and switches in addition to the rental just named.

(c) **Michigan Avenue:** Two tracks to and including the Addison Wye and the two main tracks to within 817 feet of the 1917 City Limits on Michigan Avenue. The Detroit United Railway will secure the right from the D. J. & C. Railway to the City to use jointly the portion of these tracks on Michigan Avenue west of Baby Creek, owned by the D. J. & C., at a yearly rental of $1.00, plus maintenance and replacements by the City.

(d) **Grand River Avenue:** Two tracks, including Turner Wye and to 1917 City Limits.

(e) **Oakland Avenue:** To and including the curves and tail tracks on Oakland Avenue, and including Manchester Avenue tracks.

(f) **Harper Avenue:** The Detroit United Railway will secure to the City a trackage rights for the use of the tracks owned by the Rapid Railway on Harper Avenue to Gratiot, and entering the Leesville Car House providing for joint use of these tracks as part of the City system, upon payment of 6% per annum as rental upon the Fair Cost of these tracks; and the maintenance and replacements to be paid for by the City. The City ownership herein conveyed extends easterly on Harper Avenue, for both tracks, from the center line of Mt. Elliott and Harper Avenues to the center line of Frontenac Street, the trackage rights extending thence along Harper Avenue to the Leesville car house and to Gratiot Avenue.

(g) **Gratiot Avenue:** The City ownership on Gratiot Avenue is to extend easterly to the intersection of the center lines of Harper Avenue with Gratiot Avenue. The Detroit United Railway agrees to secure to the City the joint use of the tracks owned by the Rapid Railway, easterly of this point, to secure the joint use by the City of the loop easterly of Harper Avenue, and to a point 3432 feet westerly from the center of Conners Creek, on Gratiot, and all the entrances from Gratiot Avenue into the Leesville Car House. The City as rental to maintain and renew the tracks of the Rapid Railway so used by City cars.

(h) **East Jefferson Avenue:** Two tracks are conveyed, including the Wayburn Loop at or near Alter Road.

TRACKS RESERVED BY THE COMPANY

The Company reserves the ownership in and to the various freight tracks, yards and terminals as in the list below; in each case the Company ownership of connecting tracks shall be to its property line. The maintenance and renewals of said Company owned tracks and connections, up to its property lines, to be made at the expense of the Company. The maintenance and renewals of the tracks of the City, connecting such Company tracks with the Street Railway main tracks of the City adjacent to such terminals, to be provided for at the expense of the City. The above provision is intended to cover all existing tracks and connections as now built, or as may be required in the future, for the use and development in a reasonable manner of these Company properties.

Items Reserved by the Company

1—West Side Freight Terminal at Fort and 15th Streets.
2—Woodward Avenue Freight Terminal at Woodward Car Yards near Belt Line Railway.
3—Clay Avenue Freight Terminal at Clay and Grand Trunk R. R.
4—East Side Freight Terminal at Chene, St. Aubin, Monroe and Macomb.
5—Interurban Car House, Dequindre, St. Aubin, Monroe and Macomb.
6—Superior Freight Terminal at Gratiot and Superior.
7—Freight Terminal at State Fair Grounds.

Summary of Track Mileage Conveyed as of March 17th, 1919.

Total D. U. R. mileage within City Limits		293.1631
ADD:—		
Detroit and Highland Park R. R. within City Limits		8.0298
Detroit and Highland Park R. R. Ferndale Line outside City Limits.		3.6360
		304.8289
LESS:—		
City mileage not included in purchase:		
East Side Freight Terminal	1.1075	
Interurban Car House	1.3758	
Highland Park Freight House	.0900	
Clay Avenue Freight Yard	.0450	
Gratiot and Superior Yard	.1659	2.7842
Total mileage included in purchase		302.0447
ADD:—		
Tracks of Subsidiary Companies to be used jointly, viz.:		
Rapid Ry. from center of Gratiot and Harper to end of double track east of Leesville Car House	0.2267	
Rapid Ry. from center of Harper and Frontenac on Harper (north track) to Leesville Car House	1.3890	
D. J. & C. R. from beginning of D. J. & C. Ry. west of Addison Y to 817 feet west of City Limits	0.4430	
D. M. & T. S. L. Ry. from beginning of D. M. & T. S. L. Ry. west of Dearborn Ave. to 200 feet west of westerly switch point of Y	0.1042	2.1629
Total Purchased Tracks and Mileage of tracks to be used jointly		304.2076

Recapitulation

	Purchased	Joint Use	Total
Main Track	261.5420	2.1629	263.7049
Auxiliary Track	40.5027	0.	40.5027
	302.0447	2.1629	304.2076

Appendix "C"

Buildings

Locations of the Various Buildings of the Detroit United Railway Within the Present (March 17th, 1919) City Limits of the City of Detroit.

On Parcel No.	Description and Location.
*1.	Former General Offices, 12 Woodward Ave.
3.	Power Station "A," North Side of Atwater near Riopelle.
4.	Clark Car Storage and Wye, West Side of Clark near Wabash R. R.
5.	Power Station "B," S. W. Corner of Atwater and Riopelle.
*7.	Interurban Station and General Offices, on Jefferson, Bates and Woodbridge.
*8	Residence, N. W. Corner West Jefferson and Traver.
9.	Power Dept. Headquarters, S. E. Corner Woodbridge and St. Antoine.
11.	Residence, S. W. Corner of E. Fort St. and Dequindre.
13.	Residence, S. E. Corner of E. Fort St. and Dequindre.
14.	Baker Car House, S. W. Corner of Dix and Dragoon.
15.	Residence, N. W. Corner of E. Fort St. and Dequindre.
*16.	Residence, E. S. of Infantry, south of Dix Ave.
17.	Residence, N. E. Corner of E. Fort St. and Dequindre.
*19.	Interurban Car House, Monroe, Macomb, Dequindre and St. Aubin.
*20.	Business Property, N. E. Corner of Michigan and Huron Ave.
*21.	East Side Freight Terminal, Monroe, Macomb, St. Aubin and Chene.
*22.	Business Property, N. W. Corner of Michigan and Huron.
*24.	Business Property, Grand River, Myrtle, Trumbull and Sycamore.
26.	Michigan Car House, Michigan and Welch Aves.
27.	Jefferson Car House and Yards—Jefferson and St. Jean Aves.
28.	Air Charging Station, South Side of Forest near Wabash.
29.	Kercheval Car House, N. W. Corner of Kercheval and Concord Aves.
30.	Battery Station "L," Hancock Ave. between Third and Fourth Aves.
*31.	Business Property, S. W. Corner of Chene and Hunt.
32.	Michigan Car House Addition, West Side of Military Ave. near Michigan.
*33.	Superior Freight Yards, Superior and Gratiot Aves.
34.	Warren Car House, Warren and Lawton Aves.
35.	Brush Car House, N. E. Corner of Russell and Ferry.
36.	Warren Ave. Car Yard, S. E. Corner of Warren and Lawton Aves.
37.	Track Dept. Shops, Harper Ave. and M. C. Belt Line R. R.
38.	Office and Compressor Sta., N. W. Corner of 14th and Warren Aves.
39.	Track Dept. Wards and Headquarters, S. E. Corner of Harper and Mt. Elliott Aves.
40.	Trumbull Car House, Trumbull Ave. and M. C. R. R.
42.	Third Car House, S. W. Corner of Holden and Greenwood.
45.	Leesville Car House, N. W. Corner of Gratiot and Harper.
46.	Loop and Air Compressor, Fort St., West of Dearborn.
47.	Chene Loop, Jos. Campau Ave. and M. C. R. R.
48.	Battery Station "K," S. W. Corner of Woodward and Cortland Aves.
49.	Air Compressor Station, N. E. Corner of Goodwin and Woodland.

*50. Woodward Car House and Highland Park Shops, Woodward Ave., Hamilton Blvd. and Detroit Terminal.
51. Trombly Sub-station, N. E. Corner of Trombly and Dubois.
52. West Jefferson Car House, West Jefferson between Ansbach and River Rouge.
53. Mack Ave. Loop, Mack Ave. between Gilbert and Hart.
54. Dix Car House, N. W. Corner of Dix and Livernois Aves.
55. Steam Railroad Connections, Jefferson Ave. and Detroit Terminal R. R.
56. Grand River Loop and Storage Yard, Grand River and Mackinaw Aves.
*57. Clay Ave. Freight Terminal, Clay Ave. and Grand Trunk R. R.
58. Track Location, N. W. Corner 22nd and Porter.
59. Wayburn Loop, Jefferson and Wayburn Aves.
*60. Addison Wye, N. W. Corner of Michigan and Homedale.
*64 West Side Freight Terminal, W. Fort, Lafayette, 15th and 17th Sts.
65. North Detroit Car House, Mt. Elliott and Nevada.
Air Compressor Station on leased land at Marquette and 15th Sts.
Freight Station on leased land at State Fair Grounds.

Of the foregoing Buildings, those on the Parcel Numbers marked with an asterisk (*) are to be retained by the Company, and are as follows, viz.:

*1. Former General Offices, 12 Woodward Ave.
*7. Interurban Station Properties, on Jefferson, Bates and Woodbridge.
*8. Residence, N. W. Corner of W. Jefferson and Traver.
*16. Residence, E. S. of Infantry, south of Dix Ave.
*19. Interurban Car House, Monroe, Macomb, Dequindre and St. Aubin.
*20. Business Property, N. E. Corner of Michigan and Huron Aves.
*21. East Side Freight Terminal, Monroe, Macomb, St. Aubin and Chene.
*22. Business Property, N. W. Corner of Michigan and Huron Aves.
*24. Business Property, Grand River, Myrtle, Trumbull and Sycamore.
*31. Business Property, S. W. Corner of Chene and Hunt Sts.
*33. Superior Freight Yards, Superior and Gratiot Aves.
*50. Woodward Ave. Freight Terminal—Building only retained. N. E. Corner of Woodward Car House Property.
*57. Clay Ave. Freight Terminal, Clay Ave. and Grand Trunk R. R.
*60. Addison Wye, N. W. Corner of Michigan and Homedale.
*64. West Side Freight Terminal, W. Fort, Lafayette, 15th and 17th Sts.
* Freight Station on State Fair Grounds, leased land.

Appendix "F"

Trucks

Manufacturer	Kind	Factory No.	Department	1919 Lic. No.
Packard	Pick Up	91938	Mechanical	17949
Buick	Pick Up	213214	Mechanical	17950
Carter	Pick Up	7085	Mechanical	17951
Chalmers	Pick Up	15169	Mechanical	17952
Buick	Delivery	215316	Track	17953
Buick	Delivery	D214968	Track	17954
Packard	Wrecker	91758	Track	17955
Olsmobile	Open Express	71478	Power	17956

Federal	Special Tower	652	Power	17958
Federal	Special Tower	1386	Power	17959
Federal	Special Platform	281	Power	17960
Packard	Special Tower	31819	Power	17961
Buick	Open Express	161279	Power	17962
Carter	Special Box Body	8768	Cashier's	17963
Buick	Canopy Top Express	161140	Cashier's	17966
Packard	Special Tower	31295	Power	17967
Federal	Special Tower	6223	Power	17968
Federal	Special Tower	2418	Power	18563

Grand Summary
Detroit United Railway (One Fare Zone)
Car Inventory as of March 17, 1919

NOTE FOR APPENDIX D.

Passenger cars included in Barclay Parsons and Klapp 1918 Inventory and not included in D. U. R. Inventory as of March 17, 1919, because missing.

61, 97, 171, 200, 206, 210, 219, 237, 240, 252, 291, 304, 326, 329, 336, 343, 358, 367, 368, 376, 383, 423, 458, 460, 464, 467, 473, 826, 845, 1012, 1202, 1386, 1406, 1449, 1452, 1708, 1737, 1739, 1740.

All of the above missing cars, trucks and motors, except those that have been destroyed, are to be delivered to the City.

PASSENGER CARS

Single Truck Closed	376
Double Truck Closed	704
Double Truck Closed Trail	200
Single Truck Open	141
	1421

SPECIAL REVENUE CARS.

Interurban Car—Not included.

NON-REVENUE CARS.

Special Cars	9
Mechanical Department Cars	7
Track Department Cars	70
Overhead Department Cars	11
	97
Grand Total	1518

Summary
Detroit United Railway (One Fare Zone)
Closed City Passenger Cars as of March 17, 1919

Builder.	Length Over All.	Type.	No.
Jefferson Shops	34 ft. 9 in.	Single Truck	64

Stephenson	33 ft. 2 in.	"	"	37
Stephenson	31 ft. 5 in.	"	"	6
Jefferson Shops	36 ft. 8 in.	"	"	1
St. Louis	30 ft. 10 in.	"	"	1
Kuhlman	36 ft. 9 in.	"	"	1
Lewis & Fowler	31 ft. 11 in.	"	"	2
Jones	32 ft.	"	"	3
Pullman	32 ft. 1 in.	"	"	1
Brill	31 ft. 10 in.	"	"	2
Stephenson	32 ft. 6 in.	"	"	1
Stephenson	33 ft. 6 in.	"	"	22
Cincinnati	34 ft. 7 in.	"	"	50
American Car Co.	34 ft. 5¼ in.	"	"	100
Monroe Shops	34 ft. 9 in.	"	"	24
Cincinnati	34 ft. 9 in.	"	"	56
Total				376

Detroit United Railway (One Fare Zone)
Closed City Passenger Cars (Single Truck)
as of March 17, 1919

Builder—Jefferson Shops.

Length Over All—34 ft. 9 in.

Car Numbers—51, 52 53, 54, 56, 57, 58, 59, 60, 62, 63, 65, 66, 67, 68, 70, 71, 72, 73, 74, 176, 204, 205, 208, 211, 212, 215, 216, 217, 221, 223, 224, 226, 231, 232, 233, 235, 236, 239, 242, 247, 248, 250, 251, 254, 255, 258, 259, 260, 262, 265, 267, 269, 394, 395, 398, 399, 400, 1002, 1010, 1014, 1016, 1023, 1025. —Total, 64.

Builder—Stephenson.

Length Over All—33 ft. 2 in.

Car Numbers—302, 311, 312, 314, 316, 317, 319, 320, 321, 323, 324, 325, 327, 337, 342, 346, 348, 349, 350, 352, 355, 356, 357, 362, 363, 365, 366, 369, 370, 371, 372, 373, 377, 381, 382, 384, 385.—Total, 37.

Builder—Stephenson.

Length Over All—31 ft. 5 in.

Car Numbers—441, 444, 445, 447, 450, 455.—Total, 6.

Builder—Jefferson Shops.

Length Over All—36 ft. 8 in.

Car Numbers—101.—Total, 1.

Builder—St. Louis.

Length Over All—30 ft. 10 in.

Car Numbers—109.—Total, 1.

Builder—Kuhlman.

Length Over All—30 ft. 9 in.

Car Numbers—200.—Total, 1.

Builder—Lewis & Fowler.

Length Over All—31 ft. 11 in.

Car Numbers—285, 467.—Total, 2.

Builder—Jones.

Length Over All—32 ft.

Car Numbers—296, 297, 299, 458, 460, 473, 488, 497.—Total, 8.

Builder—Pullman.

Length Over All—32 ft. 1 in.

Car Numbers—415.—Total, 1.

Builder—Brill.

Length Over All—31 ft. 10 in.

Car Numbers—471, 475.—Total, 2.

Builder—Stephenson.

Length Over All—32 ft. 6 in.

Car Number—643.—Total, 1.

Builder—Stephenson.

Length Over All—33 ft. 6 in.

Car Numbers—612, 618, 621, 623, 628, 634, 642, 645, 647, 652, 654, 655, 656, 662, 665, 666, 668, 674, 675, 690, 691, 697.—Total 22.

Detroit United Railway (One Fare Zone)
Closed City Passenger Cars (Single Truck)
as of March 17, 1919

Builder—Cincinnati.

Length Over All—34 ft. 7 in.

Car Numbers—850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899.—Total, 50.

Builder—American Car Co.

Length Over All—34 ft. 5¼ in.

Car Numbers—900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999.—Total, 100.

Builder—Monroe Shops.

Length Over All—34 ft. 9 in.

Car Numbers—1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273. —Total, 24.

Builder—Cincinnati.

Length Over All—34 ft. 9 in.

Car Numbers—1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329.—Total, 56.

Summary
Detroit United Railway (One Fare Zone)
Closed City Passenger Cars as of March 17, 1919

Builder	Length Over All	Type	No.	
Stephenson	46 ft. 8 in.	Double Truck	20	880
St. Louis	40 ft. 10 in.	" "	20	800
St. Louis	41 ft. 4 in.	" "	38	1520
Brill	41 ft. 4 in.	" "	70	2800
St. Louis	41 ft. 4 in.	" "	24	960
Kuhlman	41 ft. 5 in.	" "	25	1000
Kuhlman	44 ft. 7½ in.	" "	48	1920
Kuhlman	44 ft.	" "	182	7280
Niles	44 ft. 2 in.	" "	15	600
Niles	42 ft. 2 in.	" "	23	920
Kuhlman	42 ft. 2 in.	" "	50	2000
Cincinnati	41 ft. 4 in.	" "	36	1440
Cincinnati	42 ft. 3 in.	" "	25	1000
Kuhlman	42 ft. 3 in.	" "	25	1000
Kuhlman	46 ft. 10 in.	" "	100	4400
D. U. R.	46 ft. 10 in.	" "	1	44
Kuhlman	46 ft. 8¾ in.	" "	200	11200
Total			904	39764

Remarks—Steel and Steel Trail.

Detroit United Railway (One Fare Zone)
Closed City Passenger Cars (Double Truck)
as of March 17, 1919

Builder—Stephenson.

Length Over All—46 ft. 8 in.

Car Numbers—826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845.—Total 20. 880

Builder—St. Louis.

Length Over All—40 ft. 10 in.

Car Numbers—1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1038, 1040, 1041, 1043, 1045, 1046, 1047, 1048, 1049, 1050, 1051.—Total, 20. 800

Builder—St. Louis.

Length Over All—41 ft. 4 in.

Car Numbers—1053, 1054, 1055, 1056, 1057, 1058, 1059, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1074, 1075, 1076, 1077, 1079, 1080, 1081, 1082, 1087, 1088, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1099. —Total, 38. 1520

Builder—Brill.

Length Over All—41 ft. 4 in.

Car Numbers—1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1130, 1131, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1142, 1143, 1144,

1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177. Total, 70. 2800

Builder—St. Louis.

Length Over All—41 ft. 4 in.

Car Numbers—1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201. Total, 24. 960

Builder—Kuhlman.

Length Over All—41 ft. 5 in.

Car Numbers—1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227. Total, 25. 1000

Builder—Kuhlman.

Length Over All—44 ft. 7½ in.

Car Numbers—1375, 1376, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1384, 1385, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1423, 1424. Total, 48. 1920

Detroit United Railway Line (One Fare Zone)
Closed City Passenger Cars (Double Trucks)
As of March 17th, 1919

Builder—Kuhlman.

Length over all—~~44~~ ft.

Car Numbers—1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1450, 1451, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1539, 1540, 1541, 1542, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1551, 1552, 1553, 1554, 1555, 1556, 1557, 1558, 1559, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609. Total, 182. × 40 7280

Builder—Niles.

Length over all—44 ft. 2 in.

Car Numbers—1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624. Total, 15. × 40 600

Builder—Niles.

Length over all—42 ft. 2 in.

Car Numbers—1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649. Total, 25. 1000

Builder—Kuhlman.
Length over all—42 ft. 2 in.
Car Numbers — 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699. Total, 50.

Detroit United Railway (One Fare Zone)
Closed City Passenger Cars (Double Truck)
As of March 17, 1919

Builder—Cincinnati.
Length over all—41 ft. 4 in.
Car Numbers — 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1718, 1719, 1722, 1724, 1725, 1726, 1727, 1729, 1730, 1732, 1733, 1735, 1736, 1741, 1742, 1743, 1744, 1745, 1746, 1749. Total, 36.

Builder—Cincinnati.
Length over all—42 ft. 3 in.
Car Numbers — 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774. Total, 25.

Builder—Kuhlman.
Length over all—42 ft. 3 in.
Car Numbers — 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799. Total, 25.

Builder—Kuhlman.
Length over all—46 ft. 10 in.
Car Numbers — 3000, 3001, 3002, 3003, 3004, 3005, 3006, 3007, 3008, 3009, 3010, 3011, 3012, 3013, 3014, 3015, 3016, 3017, 3018, 3019, 3020, 3021, 3022, 3023, 3024, 3025, 3026, 3027, 3028, 3029, 3030, 3031, 3032, 3033, 3034, 3035, 3036, 3037, 3038, 3039, 3040, 3041, 3042, 3043, 3044, 3045, 3046, 3047, 3048, 3049, 3050, 3051, 3052, 3053, 3054, 3055, 3056, 3057, 3058, 3059, 3060, 3061, 3062, 3063, 3064, 3065, 3066, 3067, 3068, 3069, 3070, 3071, 3072, 3073, 3074, 3075, 3076, 3077, 3078, 3079, 3080, 3081, 3082, 3083, 3084, 3085, 3086, 3087, 3088, 3089, 3090, 3091, 3092, 3093, 3094, 3095, 3096, 3097, 3098, 3099. Total, 100.

Builder—D. U. R.
Length over all—46 ft. 10 in.
Car Number—3100. Total, 1.

Detroit United Railway (One Fare Zone)
Closed City Passenger Cars (Double Truck Trail)
As of March 17, 1919

Builder—Kuhlman.
Length over all—46 ft. 8¾ in.
Car Numbers — 5000, 5001, 5002, 5003, 5004, 5005, 5006, 5007, 5008, 5009, 5010, 5011, 5012, 5013, 5014, 5015, 5016, 5017, 5018, 5019, 5020, 5021, 5022, 5023, 5024, 5025, 5026, 5027, 5028, 5029, 5030, 5031, 5032, 5033, 5034, 5035, 5036, 5037, 5038, 5039, 5040, 5041, 5042, 5043, 5044, 5045, 5046, 5047, 5048, 5049, 5050, 5051, 5052, 5053, 5054, 5055, 5056, 5057, 5058, 5059, 5060, 5061, 5062, 5063, 5064, 5065, 5066, 5067, 5068, 5069, 5070, 5071, 5072, 5073, 5074, 5075, 5076, 5077, 5078, 5079, 5080, 5081, 5082, 5083, 5084, 5085, 5086, 5087, 5088, 5089, 5090, 5091, 5092, 5093, 5094, 5095, 5096, 5097, 5098, 5099, 5100, 5101, 5102, 5103, 5104, 5105, 5106, 5107, 5108, 5109, 5110, 5111, 5112, 5113, 5114, 5115, 5116, 5117, 5118, 5119, 5120, 5121, 5122, 5123, 5124, 5125, 5126, 5127, 5128, 5129, 5130, 5131, 5132, 5133, 5134, 5135, 5136, 5137, 5138, 5139, 5140, 5141, 5142, 5143, 5144, 5145, 5146, 5147, 5148, 5149, 5150, 5151, 5152, 5153, 5154, 5155, 5156, 5157, 5158, 5159, 5160, 5161, 5162, 5163, 5164, 5165, 5166, 5167, 5168, 5169, 5170, 5171, 5172, 5173, 5174, 5175, 5176, 5177, 5178, 5179, 5180, 5181, 5182, 5183, 5184, 5185, 5186, 5187, 5188, 5189, 5190, 5191, 5192, 5193, 5194, 5195, 5196, 5197, 5198, 5199. Total, 200.

Summary
Detroit United Railway (One Fare Zone)
Open City Passenger Cars
As of March 17, 1919

Builder	Length Overall	Type Single Truck	No.
Stephenson	28-ft. 4-in.	"	7
Pullman	30-ft. 5-in.	"	10
Stephenson	32-ft. 6-in.	"	56
Jones	33-ft. 3-in.	"	21
Brill	33-ft. 9-in.	"	13
St. Louis	35-ft. 2-in.	"	8
Brill	31-ft. 3-in.	"	4
Jefferson Shops	34-ft. 6-in.	"	22
Total			141

Remarks—Trail.

Detroit United Railway (One Fare Zone)
Open City Passenger Cars (Single Truck)
As of March 17, 1919

Builder—Stephenson.
Length Over All—28 ft. 4 in.
Car Numbers—501, 507, 517, 532, 533, 537, 549. Total, 7.

Builder—Pullman.
Length Over All—30 ft. 5 in.
Car Numbers—553, 556, 567, 568, 570, 574, 576, 589, 596, 598. Total, 10.

Builder—Stephenson.
Length Over All—32 ft. 6 in.
Car Numbers — 601, 602, 603, 604, 605, 606, 609, 610, 611, 613, 614, 615, 617, 619, 620, 622, 625, 626, 627, 630, 632, 633, 636, 638, 639, 640, 641, 648, 649, 651, 653, 657, 659, 660, 663, 664, 669, 672, 676, 677, 678, 680, 681, 682, 683, 685, 686, 687, 689, 692, 693, 694, 695, 698, 699, 700. Total, 56.

Builder—Jones.
Length Over All—33 ft. 3 in.
Car Numbers—701, 702, 703, 704, 705, 709, 710, 711, 713, 714, 719, 723, 724, 725, 728, 729, 730, 731, 735, 736, 737. Total, 21.

Builder—Brill.
Length Over All—33 ft. 9 in.
Car Numbers—740, 742, 743, 744, 751, 752, 754, 756, 758, 762, 764, 765, 768. Total, 13.

Builder—St. Louis.
Length Over All—35 ft. 2 in.
Car Numbers—771, 772, 773, 774, 775, 776, 778, 779. Total, 8.

Builder—Brill.
Length Over All—31 ft. 3 in.
Car Numbers—780, 781, 783, 785. Total, 4.
Total, 4.

Builder—Jefferson Shops.
Length Over All—34 ft. 6 in.
Car Numbers—786, 787, 790, 791, 793, 795, 796, 799, 800, 803, 804, 805, 806, 807, 809, 815, 816, 817, 819, 820, 821, 823.—Total, 22.

Summary
Detroit United Railway (One Fare Zone)
Special Revenue Cars as of
March 17, 1919

Builder	Length Over All.	Type.	No.
Monroe Shops	44 ft. 6 in.	Double Truck	1

Total, 1.
Remarks—Funeral.

Detroit United Railway (One Fare Zone)
Special Revenue Cars as of
March 17, 1919

Builder—Monroe Shops.
Length Over All—44 ft. 6 in.
Car Numbers—7007.
Remarks—Funeral.
Total—1. Grand total—1.
Interurban car not included.

Summary
Detroit United Railway (One Fare Zone)
Special Non-Revenue Cars as of
March 17, 1919

Class of Service.	No.
Money Collecting	4
Pay Car	1
Air Cleaning Car	1
Schooling Car	1
Air Car	1
Supply Car	1
Total	9

Summary
Detroit United Railway (One Fare Zone)
Overhead Deparment Cars as of
March 17, 1919

Class of Service.	No.	Total
Coal Shifting Cars	2	
Flat Cars	5	
Line Cars	2	
Bond Cars	1	
Electric Locomotive	1	11

Detroit United Railway (One Fare Zone)
Overhead Deparment Cars as of
March 17, 1919

Builder.	Length Over All.	Car Nos.	Total
.....	19 ft. 2 in.	100	1
Remarks—Coal Shifter			
Monroe Shops	15 ft. 6 in.	1821	1
Remarks—Coal Shifter			
Rebuilt D. U. R.	22 ft. 0 in.	1902	1
Remarks—Flat			
D. U. R.	20 ft. 0 in.	1903	1
Remarks—Flat			
.....	20 ft. 0 in.	1904-1905	2
Remarks—Flat			
Monroe Shops	37 ft. 0 in.	1935	1
Remarks—Line			
.....	20 ft. 0 in.	1978	1
Remarks—Flat			
.....	.....	1979	1
Remarks—Bonding			
Monroe Shops	31 ft. 1½ in.	1981	1
Remarks—Locomotive			
Jefferson Shops	21 ft. 0 in.	5624	1
Remarks—Line			
Grand Total			11

Detroit United Railway (One Fare Zone)
Truck Inventory as of
March 17, 1919

Type of Truck	Number
Dupont Single	476
Dupont Double	2
St. Louis 47	135
Brill	1

Brill 21	4
Brill 27F	234
Brill 27F1	70
Brill, 27 FE1	90
Brill 27 FE2	68
Brill A. B	198
Brill 67F	152
Standard 050	816
Standard M. C. B	4
Standard A. B. Trail	50
Jefferson Shops	1
D. U. R	4
Diamond	38
Industrial Iron Works	2
Maguire	3
Maximum Traction	6
Special Bond	1
No Name	1
Miscellaneous—Under cars in storage	92
Total	2448

Detroit United Railway (One Fare Zone)
Motor Inventory as of
March 17, 1919

Type of Motors	Number
D Steel	277
29 Steel	80
34 Steel	2
12 Westinghouse	2
12A Westinghouse	4
38 Westinghouse	18
49 Westinghouse	4
56 Westinghouse	16
68 Westinghouse	110
93 Westinghouse	248
310 Westinghouse	412
57 General Electric	38
203 General Electric	1132
205 General Electric	1
210 General Electric	428
800 General Electric	2
Total	2774

Detroit United Railway (One Fare Zone)
Special Non-Revenue Cars as of
March 17, 1919

Builder	Length Over All	Car Nos.	Total
Jones	26 ft. 0 in.	88	1
Remark—Money.			
Jones	26 ft. 0 in.	93	1
Remark—Pay.			
St. Louis	30 ft. 10 in.	111	1
Remark—Air Cleaning.			
St. Louis	30 ft. 10 in.	145	1
Remark—Schooling			
St. Louis	30 ft. 10 in.	158	1
Remark—Money.			
St. Louis	30 ft. 10 in.	171	1
Remark—Money.			
Monroe Shops	45 ft. 4 in.	1000	1
Remark—Air.			
Monroe Shops	34 ft. 0 in.	1950	1
Remark—Supply.			
D. U. R	19 ft. 8 in.	2089	1
Remark—Money.			
Grand Total			9

Summary
Detroit United Railway (One Fare Zone)
Mechanical Department Cars as of
March 17, 1919

Class of Service	No.	Total
Shop Transfer Cars	4	
Wreckers	2	
Flat Cars	1	7

Detroit United Railway (One Fare Zone)
Mechanical Department Cars as of
March 17, 1919

Builder	Length Over All	Car Nos.	Total
Brill (Rebuilt)	25 ft. 6 in.	76	1
Remarks—Wrecker.			
Lewis & Fowler	31 ft. 11 in.	281	1
Remarks—Wrecker.			
Stephenson	33 ft. 2 in.	308	1
Remarks—Shifter.			
Jefferson Shops	9 ft. 4 in.	Teddy	1
Remarks—Shop Transfer.			
D. U. R	10 ft. 2 in.	2043-	

	11 ft. 2½ in.	2044	2
Remarks—Shifters.			
D. U. R.	20 ft. 0 in.	2086	1
Remarks—Flat.			
Grand Total			7

Summary
Detroit United Railway (One Fare Zone)
Track Department Cars as of
March 17, 1919

Class of Service	No.
Concrete Breaker	1
Air Car	1
Concrete Mixers	2
Flat Cars	18
Sand Cars	3
Passenger Cars	2
Snow Plows	12
Sprinklers	11
Derricks	3
Dump Cars	8
Construction Cars	2
Wrecker	1
Rail Grinders	3
Crane	1
Welder	1
Traction Engine	1
Total	70

Detroit United Railway (One Fare Zone)
Track Department Cars as of
March 17, 1919

Builder	Length Over All	Car Numbers
.....	16 ft. 1 in.	8
Remarks—Concrete Breaker.		
Total, 1.		
.....	17 ft. 4 in.	10
Remarks—Air.		
Total, 1.		
.....	16 ft. 11 in.	18
Remarks—Flat.		
Total, 1.		
D. U. R.	23 ft. 0 in.	21
Remarks—Concrete Mixer.		
Total, 1.		
Jones	32 ft. 0 in.	289
Remarks—Sand.		
Total, 1.		

Pullman	32 ft. 3 in.	431
Remarks—Sand.		
Total, 1.		
Jones	32 ft. 0 in.	461
Remarks—Passenger.		
Total, 1.		
Jones	32 ft. 10 in.	490
Remarks—Passenger.		
Total, 1.		
.....	37 ft. 10 in.	1800
Remarks—Snow plow.		
Total, 1.		
.....	23 ft. 1 in.	1802, 1803
Remarks—Snow plow.		
Total, 2.		
.....	21 ft. 5 in.	1804
Remarks—Snow plow.		
Total 1.		
.....	23 ft. 8 in.	1805, 1806 1807, 1808
Remarks—Snow plow.		
Total, 4.		
Rebuilt D. U. R.	22 ft. 5 in.	1810
Remarks—Sprinkler.		
Total, 1.		
.....	20 ft. 10 in.	1811
Remarks—Derrick.		
Total, 1.		
.....	22 ft. 5 in.	1812
Remarks—Sprinkler.		
Total, 1.		
Rebuilt D. U. R.	22 ft. 2 in.	1814
Remarks—Derrick.		
Total, 1.		
.....	23 ft. 1 in.	1815
Remarks—Flat.		
Total, 1.		
Russell Wh. & Fdy.	35 ft. 7 in.	1817
Remarks—Dump.		
Total, 1.		
Rebuilt D. U. R.	22 ft. 2 in.	1818
Remarks—Flat.		
Total, 1.		
.....	23 ft. 7 in.	1819
Remarks—Flat.		
Total, 1.		
.....	17 ft. 9 in.	1824
Remarks—Snow plow.		
Total, 1.		
Total carried forward—25.		

Detroit United Railway (One Fare Zone)
Track Department Cars as of
March 17, 1919

Builder	Length Overall	Car Numbers	Remarks	Total
			Brought forward	25
	23 ft. 1 in.	1825	Flat	1
Russell Wheel & Fdry..	30 ft. 4 in.	1826	Dump	1
Rebuilt D. U. R.....	20 ft. 0 in.	1828	Flat	1
Russell Wheel & Fdry..	30 ft. 4 in.	1829-1830	Dump	2
Russel Wheel & Fdry..	35 ft. 7 in.	1831	Dump (rebuilt '12)	1
Russel Wheel & Fdry..	30 ft. 4 in.	1832	Dump (rebuilt '12)	1
Russel Wheel & Fdry..	22 ft. 3 in.	1833	Flat	1
Russel Wheel & Fdry..	30 ft. 4 in.	1846	Dump	1
	36 ft. 0 in.	1860	Flat	1
	22 ft. 5 in.	1864-1865	Sprinkler	2
	23 ft. 4 in.	1866	Flat	1
	22 ft. 9 in.	1867	Snow Plow	1
	21 ft. 5 in.	1868	Derrick	1
	33 ft. 6 in.	1869	Concrete Mixer	1
Rebuilt D. U. R.....	23 ft. 1 in.	1876	Construction	1
Monroe Shops	21 ft. 10 in.	1878	Sand Trail	1
Russel Wheel & Fdry..	30 ft. 4 in.	1879	Flat	1
	40 ft. 8 in.	1880	Construction	1
Russel Wheel & Fdry..	30 ft. 4 in.	1886-1887-1888-1889		
		1890-1892-1895-1896	Flat	8
Total carried forward.....				53

Detroit United Railway (One Fare Zone)
Track Department Cars as of
March 17, 1919

Builder	Length Overall	Car Numbers	Remarks	Total
			Brought forward	53
Russel Wheel & Fdry.....	35 ft. 7 in.	1901	Dump (rebuilt '12)	1
Jefferson Shops	24 ft. 2¼ in.	1906	Wrecker (rebuilt '15)	1
Monroe Shops	22 ft. 5 in.	1917-1918-1921		
		1922-1924	Sprinkler	5
Harper Yards	13 ft. 9 in.	1929-1941-1942	Rail Grinder	3
Industrial Iron Works.....	25 ft. 6 in.	1974	Crane	1
Monroe Shops	23 ft. 6 in.	1982-1983	Sprinklers	2
Harper Yards	23 ft. 2 in.	2087-2088	Snow Plows	2
North American Construction Company		2093	Welder	1
Port Huron Engine & Thresher Co.		4554	Traction Engine	1
Grand total				70

Horses and Wagons

1 Black Horse	Line
2 Bay Horses	Line
1 D. T. Windlass Wagon	Line
1 S. T. Wagon	Line
Harness and Accessories	Line

Appendix "G"

List of Air Compressor Plants and Charging Stations, March 17th, 1919

BAKER CAR HOUSE.
BATTERY STATION "K"
BRUSH CAR HOUSE.
*CLARK CAR HOUSE.
14TH AND FOREST.
15TH AND MARANTETTE.
DIX CAR HOUSE.
HARPER YARDS—CARS IN SHOP.
HARPER YARDS—CARS ON STREET.
HIGHLAND PARK SHOPS.
JEFFERSON CAR HOUSE.
JOS. CAMPAU LOOP.
KERCHEVAL CAR HOUSE.
LEESVILLE CAR HOUSE.
MACK LOOP.
MICHIGAN CAR HOUSE.
MYRTLE AND GRAND RIVER.
OAKLAND WYE.
POWER DEPARTMENT.
METZGER AND HAMILTON.
TRUMBULL CAR HOUSE.
WARREN CAR HOUSE.
WARREN AND 14TH.
*WEST JEFFERSON CAR HOUSE.
WEST FORT AND P. M. R. R.
*WEST JEFFERSON AND RIVER ROUGE.
WOODWARD CAR HOUSE.
GRAND RIVER LOOP.
ST. JEAN AND KERCHEVAL.

* One and the same.

Appendix "H"

Power Plant Buildings

STATION "A"—Power Plant Buildings, located at north side of Atwater Street, near Riopelle Street.

STATION "B"—Power Plant Buildings located at southwest corner of Atwater and Riopelle Streets.

Substation Buildings

TROMBLY SUBSTATION—Substation Building located at northeast corner of Trombly and Dubois Streets.

LEESVILLE SUBSTATION—Substation Building located at north-

west corner of Gratiot and Harper Avenues.

BATTERY STATION "K"—Storage battery building located at southwest corner of Woodward and Cortland Avenues.

BATTERY STATION "L"—Storage battery building located on the north side of Hancock Avenue between Third and Fourth Avenues.

Appendix "I"

Power Plant Equipment

Power Station "A"

2—1,500 H. P. Allis Chalmers T. C. C. engines. 7,000 K.W. Westinghouse generators.
2—Worthington condensers.
2—1,500 H. P. Allis Chalmers T.C.C. engines.
2—1,000 K.W. G.E. generators.
2—Worthington condensers.
1—2,500 H. P. Allis Chalmers C.C.C. engine.
1—1,500 K.W. Westinghouse generator.
1—Allis Chalmers barometric condenser.
1—Booster set consisting of 1 250 K.W. Westinghouse generator and 1 360 H. P. Westinghouse motor.
1—Booster set consisting of 1 350 K.W. Westinghouse generator and 1 520 H. P. Westinghouse motor.
1—Switchboard consisting of 41 continuous panels and such other panels as may be in the Station with instruments and all accessories.
12—250 H. P. Babcock & Wilcox W.T. boilers with 12 Murphy furnaces and stokers complete.
4—354 H. P. Stirling W.T. boilers with 4 Murphy furnaces and stokers complete. Fire pumps. Boiler feed pumps. Heaters and pumps. Coal and ash conveying machinery. Hoppers, frames and chutes.
7—Locomotives and cars among other No. 1821A, 1921B and 100C. Traveling and locomotive cranes. Stacks, chimneys and breeching.

Power Station "B"

2—600 H. P. E.P. Allis, C.C.C. engines.
2—400 K.W. Walker generators.
2—Davidson condensers.
2—1,200 H. P. E.P. Allis C.C.C. engines.
2—800 K. W. Walker generators.
2—Davidson condensers.
1—2,250 H. P. Filer and Stowell C.C.C. engine.
1—1,500 K.W. Westinghouse generator.
1—Blake condenser.
1—2,250 H. P. Filer and Stowell C.C.C. engine.
1—1,500 K.W. Westinghouse generator.
1—Baragwanath barometric condenser.
1—4,500 H. P. Westinghouse steam turbine and 3,000 K.W. generator.
1—Westinghouse Leblanc condenser.
1—8,333 K.V.A. G. E. steam turbine and generator.
1—Westinghouse Leblanc condenser.
3—Exciter units complete. Booster sets complete.

2—1,500 K.W. G.E. motor generator sets. All switchboards and accessories.
6—Transformers (3 40 K.V.A. and 3 37½ K.V.A.) with wiring structures complete.
4—600 H. P. Stirling W.T. boilers.
4—Taylor stokers.
8—300 H. P. Stirling W.T. boilers.
8—Murphy stokers.
8—350 H. P. Stirling W.T. boilers.
4—Murphy stokers.
4—Detroit stokers.
2—2,500 H. P. Cochrane heaters.
1—10,000 H. P. Cochrane heater.
3—Heater pumps.
1—Fire pump.
5—Boiler feed pumps. Extra driving apparatus for stokers. Stacks and breeching.
2—Blower sets and auxiliaries. Coal and ash conveying machinery complete. Griffith steam jet ash conveyor complete. Overhead coal bunker complete. Traveling cranes.

Also in all Power Stations:

Separators, all condenser and other pumps, engine and engine room accessories, starting boxes, bus bar and cable material installed and their supports, lightning arresters, rheostats and stands, feed wires and supports, miscellaneous cables and wires, miscellaneous auxiliary material installed and wires, portable and other testing and recording instruments, all pumps of all kinds with their accessories, steam purifiers, tanks, heaters, runways, breeching, pipe, valves, fittings, covering, etc., complete; intake and discharge tunnels, pipes and screens, tools and machine tools and auxiliary apparatus, furniture and fixtures, receivers, economizers, water testing equipment, coal crushing equipment, pipe shops, testing laboratory complete, and such other installed equipment as is not herein otherwise covered.

Appendix "J"

Substation Equipment

Trombly Substation—

4—Motor generator sets, Westinghouse, consisting of 4 500 K.W. D.C. generators and 4 720 H. P. motors and 4 12.5 K.W. exciters.
16—Panel switchboard with instruments, switches and all other accesories. Brackets, pedestals, lightning arresters, oil switches, rheostats, bus bars, cables, feeders and all other accessories. Also 200,000 pound hand crane and furniture and fixtures.

Leesville Substation—

4—Motor generator sets, Westinghouse, consisting of 4 500 K.W. D. C. generators and 4 720 H. P. motors and 4 12.5 K.W. exciters.
14—Panel switchboards, instruments, switches, brackets, pedestals, lightning arresters, etc.
1—Hand crane, 20,000 lbs. capacity. Tools, furniture and fixtures.

Battery "K"

1—2,500 ampere storage battery, 260 cells.
1—50/127 V., 2,000 amp., Weston generator and 300 H. P. motor.
15—Panel switchboard and all accessories. Tools, furniture and fixtures.

Battery "L"

1—2,000 amp., 250 cells, storage battery complete.
1—Booster set, consisting of 1 80V/1600 ampere Weston generator and 1 200 H. P. Weston motor.
11—Panel switchboard with instruments and all accessories. Tools, furniture and fixtures.
1—Testing panel.

All the property of the railway company installed in the substations of the Detroit Edison Company. This property consists in general of switchboard panels and all instruments on said panels, bus bars back of said panels, feeders from said bus bars out to the railway company's feeders and protective apparatus on said feeders.

The number of panels and their location are given as follows:

Edison Beech Street Station—

Located on Beech Street just west of First Street.
7 panels.

Edison Beecher Avenue Station—

Located on Beecher Avenue south of Michigan Avenue.
10 Feeder Panels.

Edison Delray Station—

Located at Rademacher and West Jefferson Avenue.
7 Feeder Panels.

Edison Grand River Station—

Located on Grand River Avenue and Larchmont Avenue.
7 Feeder Panels.

Edison Hart Station—

Located on Hart Avenue near Kercheval Avenue.
7 Feeder Panels.

Edison Highland Park Station—

Located on Cortland West of Woodward.
Railway Company owns no panels in this Station, but does own feeders from Edison switchboard to its main feeders.

Edison McComb Station—

Located on McComb between Brush and Randolph.
7 Feeder Panels.

Edison Second Avenue Station—

Located on Second Avenue near Amsterdam Avenue.
11 Feeder Panels.

These are all of the Railway Company's property in Edison substations.

Except one panel in each sub-station reserved for interurban use and feeders leading therefrom.

Equalizer boards and instruments at the following locations, viz..
At Baker Car House, 8 panels and all accessories.
At Kercheval Car House, 8 panels and all accessories.
At Michigan Car House, 1 panel and all accessories.
At Warren Car House, 2 panels and all accessories.
At 14th and Warren Office, 6 panels and all accessories.
At Detroit Baseball Park, 8 panels and all accessories.
At Superior Street Yards, 8 panels and all accessories.
At Jefferson Car House, 4 panels and all accessories.

Schedule "B"

Schedule of Mortgage Bonds of Detroit United Railway

1—Detroit United Railway First Consolidated Mortgage Thirty-Year 4½ per cent Gold Bonds, dated January 1st, 1902, Due January 1st, 1932	$25,000,000
Of which there is held in escrow by the Trustee—$50,000 against the retirement of $50,000 Detroit Railway Bonds now in process of conversion and $7,105,000 for the retirement of the following underlying Bonds:	
2—Detroit Railway First Mortgage 5's, due $50,000 December 1st of each year from 1919 to 1923 inclusive, and $1,200,000 on December 1st, 1924	1,450,000
3—Detroit, Fort Wayne and Belle Isle Railway First Mortgage 5 per cent Bonds, due April 1st 1927	1,200,000
4—Detroit, Rochester, Romeo and Lake Orion Ry. First Mortgage 5 per cent Bonds, due June 1st, 1920	1,100,000
5—Detroit and Flint Railway First Consolidated Mortgage 5 per cent Bonds, due August 1st, 1921	1,400,000
6—Detroit and Northwestern Railway First Mortgage 4½ per cent Bonds, due May 1st, 1921	855,000
7—Detroit and Pontiac Railway First Mortgage 5 per cent Bonds, due February 1st, 1922	500,000
8—Detroit and Pontiac Railway First Consolidated Mortgage 4½ per cent Bonds, due June 1st, 1926	600,000
Total	$ 7,105,000

Memorandum:

Total Bonds outstanding issued under $25,000,000 Detroit United Railway First Consolidated Mortgage, dated January 1st, 1902	$17,845,000
Held by Trustee to retire the underlying Bonds above listed	7,155,000
Total	$25,000,000

Important Notice to Voters

IF you approve of the purchase of the Detroit United Railway, as proposed by the Board of Street Railway Commissioners, it will be necessary for you to vote "Yes" on the agreement to purchase and the charter amendment as well, both of which appear on the ballot which will be given you April 7.

Richard M. Meade
Union Club. New York

Report on
Detroit Street Railway Traffic
AND
Proposed Subway

MADE TO

Board of Street Railway Commissioners
City of Detroit

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Board of Street Railway Commissioners
City of Detroit

For the year 1914

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JAMES COUZENS, *Commissioner*
JAMES WILKIE, *Commissioner*
JAY G. HAYDEN, *Secretary*

For the year 1915

JAMES COUZENS, *President*
JAMES WILKIE, *Vice President*
JOHN F. DODGE, *Commissioner*
JAY G. HAYDEN, *Secretary*

BARCLAY PARSONS & KLAPP

CONSULTING ENGINEERS

60 Wall Street, New York.

WM. BARCLAY PARSONS
EUGENE KLAPP
H. M. BRINCKERHOFF
W. J. DOUGLAS

January, 1915.

To the Honorable Board of Street Railway Commissioners,

City of Detroit.

Dear Sirs:

In accordance with our agreement of July 27, 1914, with your Honorable Board, and following further instructions from you from time to time, we have made an investigation and study of the street railway traffic conditions of Detroit, having particularly in view the rush hour congestion in the center of the city and the possible necessity for a subway, or other rapid transit relief, and beg leave to herewith submit our report and recommendations.

To facilitate the study of the report, we have divided it into four parts:

Part I treats as briefly as possible the vital and fundamental points, and gives a general summary of the investigation together with our conclusions and recommendations.

Part II gives the full details, illustrated by comparative statements and diagrams.

Part III contains the statistical matter gathered in our investigation.

Part IV contains the large maps, plans and diagrams.

We wish to express our sincere appreciation of the assistance and hearty co-operation of the city officials and their assistants, and also that of the officers and operating staff of the Detroit United Railway during the course of our work in preparing this report. We also wish to express our thanks to the citizens of Detroit who in various ways have been helpful to us, and to the Detroit press for their kindness in securing the public's attention to our street car checking, where the coöperation of the public was necessary.

Faithfully yours,

Barclay Parsons & Klapp,
Consulting Engineers.

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PART I

CONDENSED REPORT WITH RECOMMENDATIONS

The problem presented for solution by the traffic situation of Detroit today is a periodically recurring question in all of our rapidly growing American cities. Briefly, this question is how to meet the increasing needs and satisfy the demands of the people of great urban centers, not only for adequate but thoroughly modern transportation facilities, while maintaining the railway systems on a sound, self-supporting financial basis. The solution of this problem requires an accurate determination of the existing traffic conditions, their history and growth, and the probability of the continuance of their controlling elements.

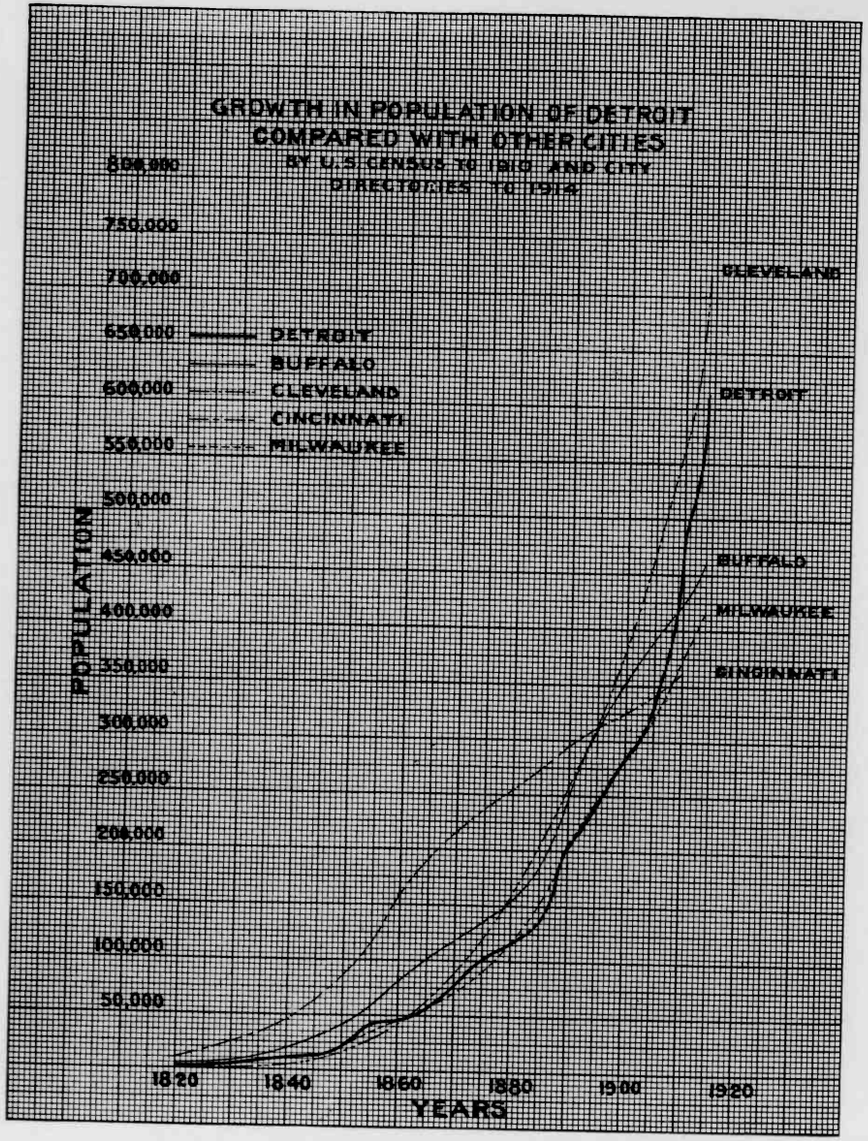
Provision for meeting the future needs of Detroit must be based upon the above, checked by a comparison with the traffic history of other cities of similar size and characteristics.

THE CITY OF DETROIT

From a transportation standpoint, Detroit is a city of the semicircular type with its center substantially at the City Hall, its east and west diameter paralleling the Detroit River for a distance of about 12 miles, and a radius corresponding closely to Woodward Avenue extending north about 7 miles from the river front. (See MAP 1.) The entire area covered by the city and suburbs is, for traction purposes, practically level. The radial or hub-and-spokelike system of streets formed by the principal avenues, such as Fort, Michigan, Grand River, Woodward and Gratiot, which converge approximately to the City Hall, define the features of the city's general plan.

The population of Detroit in 1773 was 1,367, and the city has shown a steady increase each decade up to the present time. Prior to 1900 the increase in population followed closely the rate of growth of other Lake cities, such as Buffalo, Cleveland, Milwaukee and Chicago. (See diagram on following page.) From 1900 to 1914 a sudden increased rate of growth occurred, greatly in excess of other Lake cities of its size, placing it today in population ahead of all these cities except Cleveland and Chicago. In 1900 the census of the city proper showed 285,704 people; in 1910, 465,766, and in 1913 by directory estimate 597,468, while the city and suburbs from 1900 to 1914 increased from approximately 374,000 to 660,000, or 76.5% increase in 14 years.

The markedly uniform distribution of this population over the city area is shown on MAP 3, which gives the population by half-mile districts from 1904 to 1913. The steady growth in practically all these districts and the



particularly rapid growth in some of the outlying and suburban sections is noticeable.

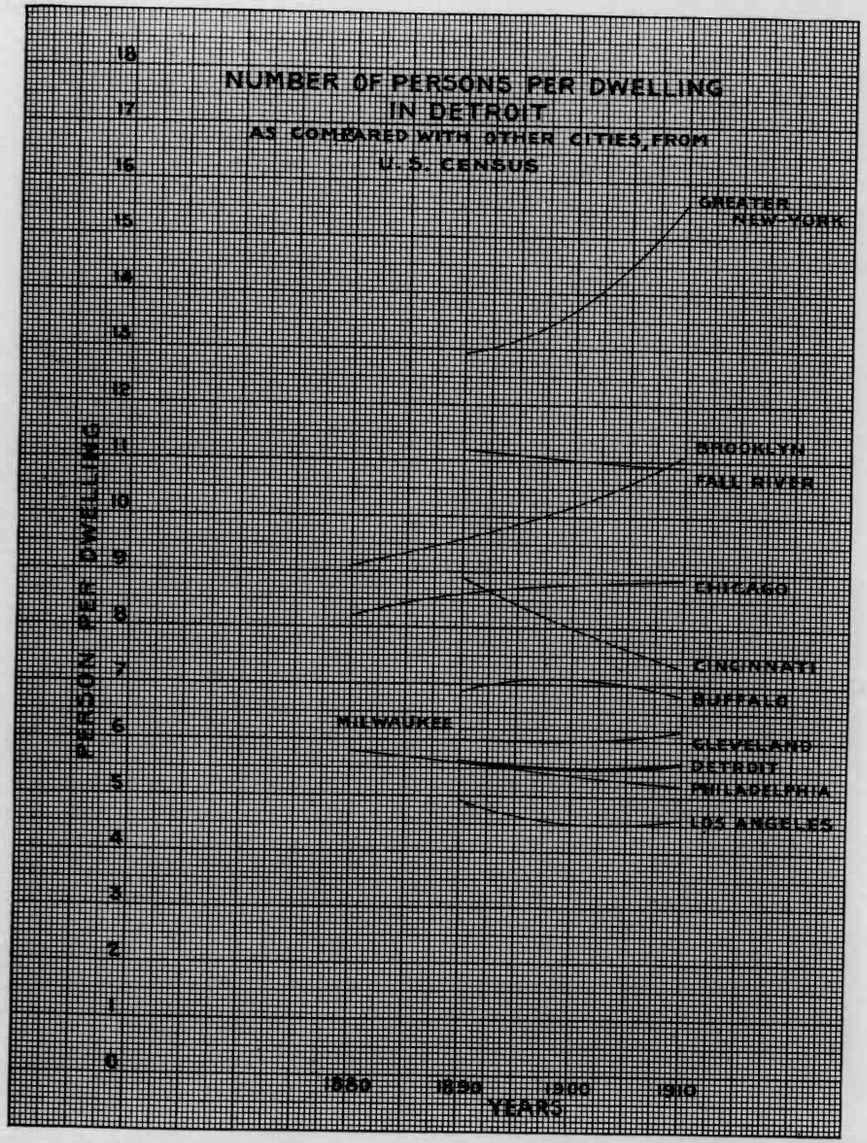
The area of the city of Detroit from 1857 to 1875 was 12.75 square miles, and was of an approximately rectangular form with a river frontage of about 4 miles and a population density per square mile at the end of the period of about 7,950 people. By 1900 the area within the city limits had grown to 28.35 square miles and the density of population to 10,077 people per square mile, the form of the area having been somewhat altered by a narrow elongation north along Woodward Avenue. In 1910 the area had increased to 40.79 square miles, with a density of population of 11,418 per square mile. The year 1913 found the area of the city 41.76 square miles and a population estimated from the city directory corresponding to a density per square mile of 14,310, which is about the same or possibly less than the average of other American cities of the same general size and type.

This rather low average density of population and its singularly even distribution is caused by the prevalence of detached family residences, Detroit being peculiarly a city of individual homes. These characteristics are seen in the statistics of the past 20 years, which show the average persons per dwelling to be 5.5, which is much below that of similar American cities. (See diagram on following page.)

A change in this condition is already noticeable, a substitution of flats and apartment houses having commenced, particularly in the older downtown residence districts. These buildings will provide increased housing facilities within walking distance of the business, retail and office districts. This form of building activity has in other cities resulted in a congestion of population in limited areas, tending to greatly restrict the growth of outlying sections and to concentrate traffic along certain lines of travel.

During the period of growth under consideration Detroit has become more markedly a manufacturing city so that the residential distribution shown on MAP 8 of 45,611 factory workers from 11 groups of factories is of special interest. The address lists of employees from these factories, representing the principal industries of Detroit, were examined and the distribution determined according to residences, into one mile sections, as indicated on the above mentioned map. The separate groups of factories consist of those located near each other in distinct districts, the effort being to make the distribution representative both of the principal factory districts and the principal classes of workers of the city.

This map indicates a wide and general scattering of this part of the population throughout nearly all districts of the city. The proportion of employees living within walking distance of the various factory groups is much larger in the case of the older establishments. The newer factories, such as Group 1, show almost as many employees in distant sections as in those near the plants themselves. In Section 14 there are shown 1,021 employees from Factory Group 1 living 4 miles from the factory, there being only 1,298 in the mile square section in which the factories stand. Group 7 is a sample of one of the older industries, showing 48.7% of its employees living within a one mile radius of the factory, Group 1 on the other hand having only 16.7% of its employees within the mile radius. The general distribution of employees



throughout the city is most noticeable also in the automobile and other more recently established industries. It is the opinion of many of the factory managers, however, that there is a noticeable tendency to build up suitable residence districts near the newer factories.

Of the 45,611 factory workers shown on MAP 8, 13,000 are now within walking distance of their factories, 20,600 use street car transportation outside the congested district, and 12,000 use lines or transfer through the heart of the city.

TRAFFIC CONDITIONS

The information from this map is, therefore, particularly valuable as it points to the cause of the general traffic movement of a large body of factory workers twice a day through the center of the city. Assuming the 17 factories investigated as being representative of the total population of this class, there is a probability of over 30,000 factory employees traveling twice daily through the congestion. The probability of this movement decreasing, by reason of suitable housing facilities being provided nearer their places of employment, is to be expected.

This transfer condition was further indicated by counts made at and about the City Hall from 5:30 to 7:00 A.M. During these hours the route of passengers can at times be easily noted on the otherwise empty streets, the individuals being almost entirely factory workers. The transfer was found to be practically from every line to every other line, no general movement from any one line to any single line being marked, except that the transfer to Woodward Avenue from all lines was heaviest.

It does not appear, therefore, that a belt line or system of such lines that would be financially warranted would relieve this condition and a continued transfer of a large part of this traffic seems unavoidable. The building of belt lines must be justified by their local usefulness, not as a relief of the central congestion of Detroit.

The present serious traffic congestion has been developing, generally speaking, during the period since 1900. A determination, therefore, of the causes and characteristics of the growth of Detroit during this period which might in other ways affect traffic, and a comparison of these with other cities, is of importance.

The statistics show that the total street railway revenue passengers carried per annum in Detroit increased from 1904 to 1908 approximately at the same rate as the average of the transportation systems of the 32 largest cities of the United States. From 1908 to 1914 inclusive, this rate of increase however exceeded the average, the annual rate of increase for the average city being 7.8% per year, whereas in Detroit this rate was 17.1% per year. The foregoing facts disclose a very unusual and abnormal rate of increase in population and a still larger increase in street railway traffic in Detroit within the past 10-year period.

The intimate relation between these high rates of traffic growth and the industrial history of Detroit is very apparent. The United States census reports show the value of the manufacturing products of Detroit in 1899 amounted to over $88,000,000, in which there was nothing reported for auto-

mobiles. In 1909 the total manufactured products were valued at approximately $253,000,000, of which nearly $60,000,000 were in automobiles and automobile accessories. This is an increase of 188% in the total value of manufactured products in the 10-year period previous to 1909, which is greater than Chicago, Cleveland or any similarly situated city.

In 1913 the Michigan State Labor Commissioner reported the total value of manufactured products of Detroit as $410,000,000, of which $208,000,000 represented automobiles and automobile accessories. According to the Board of Commerce of Detroit this latter sum amounted to 52% of the value of the entire automobile output of the United States.

The high rate of wages and the large payroll represented by the manufacturing output just noted, particularly in automobiles, together with the unusual rapidity of the growth in this period of the other manufacturing industries of Detroit, must be looked upon as one of the explanations for the unusual and abnormal rate of growth of street railway traffic and revenue rides per capita.

American cities have shown a constant and increasing rate of traffic growth up to 700,000 to 800,000 population, but from this point on the rate of increase in proportion to the population has been markedly less. Detroit in point of size has arrived at this apparently critical stage, so that caution must be exercised in basing future predictions on the figures just mentioned.

STREET RAILWAY SYSTEM

The street car transportation in Detroit, commencing with an 8 mile horse car line in 1863, has developed through the usual stages, excepting the cable car period, of other American cities, until at the present time there exists an electric street railway system of 206.88 miles of main line single track, with double truck pay-as-you-enter cars on the principal lines.

All of the street railway lines of Detroit and a system of 8 tributary interurban lines are owned and operated by the Detroit United Railway. This system is a consolidation of a number of separate companies, which were unified under this single management in 1900.

The principal car routes follow the main radiating thoroughfares, 14 of the 20 city lines passing directly through the hub or central district surrounding the City Hall. Such a system results today, on account of the tremendously rapid growth and the conditions previously noted, in a congestion of traffic at the center of the city during the morning and evening rush hours that is so severe as to cause interrupted, slow and otherwise unsatisfactory service during these periods of greatest demand for rapid transit.

As a rule the blocking of cars commences on the east bound track of Michigan Avenue near Griswold or Woodward. This is usually followed by a south bound block on Woodward Avenue, which often extends to the river and north again to Congress or even State Street. Griswold Street, both north and south of Fort or Michigan, is also affected, as well as many other streets at more distant points. The cause of these blockades is primarily the multiplicity of street car crossings in a very limited district. The two north and south parallel and adjacent streets—Woodward and Griswold—

carrying the heaviest street car traffic of the city are both crossed at 5 successive street corners by the main east and west car lines. Besides these direct crossings, other cars turn in and out at these street intersections counter to the general direction of the main traffic. When to this car operation is added the heavy vehicle and pedestrian movements of the rush hours the impossibility of avoiding the serious and annoying delays with the present system of operation is quite evident.

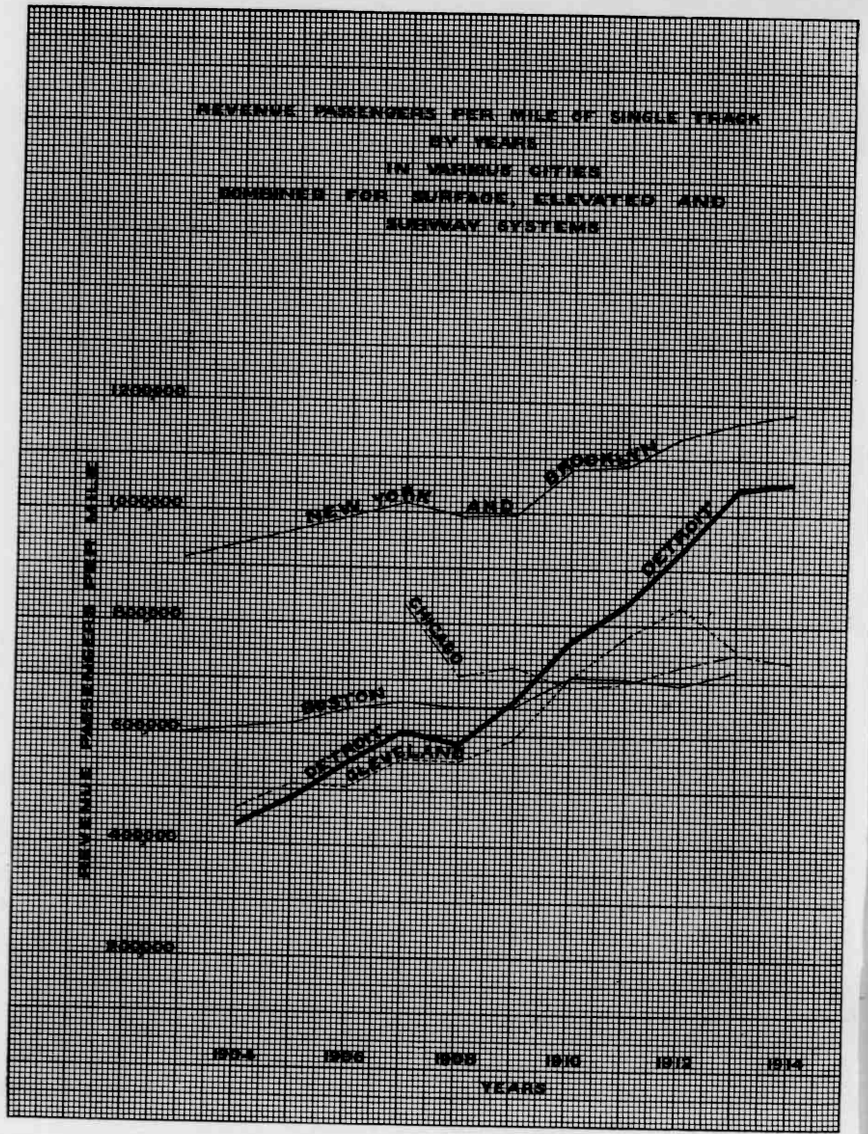
While the unusual rates of growth in population, manufacturing and traffic previously mentioned were building up the passenger travel to its present proportions, a marked failure is noticeable in Detroit's street railway system to keep pace with corresponding extensions and increases of its trackage. During the period from 1904 to 1913 the Detroit street railway system increased its mileage from 180.19 miles to only 206.88 miles of main single track, an addition of 14.8%. In this same period (1904 to 1914) the total revenue passengers carried grew from 78,349,220 to a total of 219,606,056, an increase of 180%. This latter figure gives a density of traffic per mile of main single track of 1,062,000 revenue passengers, which is about 40% heavier than Cleveland in 1913 and 44% heavier than the density on the surface and elevated lines of Chicago in 1914. This figure is also much above the average of other typical American cities of similar general character, as shown by diagram on following page.

One result of the industrial growth previously noted is that a traffic condition somewhat peculiar and unusual has arisen in Detroit during the past 12 or 14 years, due to the location of new factories along the steam railroad belts around the city. These factories now form a girdle surrounding practically 70% of the population of Detroit.

With the radial system of street railways and the wide distribution of factory workers there is therefore an additional reason for the heavy passenger movement in the morning from various residential parts of the city toward the common center, and outward again to the girdle of factories, with a reverse movement over the same routes again through the center of the city in the evening. This traffic to a certain extent combines with, and in the evening rush hour is largely coincident with, the general business and office traffic movements of the city. These latter movements are largely toward the heart of the city from the residential districts in the morning and outward when returning in the evening.

Under all of these conditions the present street car delays, congestion and crowding are obviously inevitable at the traffic center under the present method of operation as soon as the number of cars necessary to handle the rush hour business exceed the number that can be loaded and unloaded and passed without delay through the crossings at the center of the city.

In order to analyze the traffic itself and decide upon some effective and adequate means of relief, it has been necessary to ascertain accurately the present traffic condition and passenger movements, particularly during the rush hours. A determination of these conditions has been made by us during the past 6 months by placing observers on the cars on each line of the city, who recorded the number of passengers loading and unloading at each street corner, the running time of cars between certain points, the number of pas-



sengers on the cars, together with special notes of transferring and other conditions. These observations were carried on from 5:30 A.M. until midnight.

The detailed results of these counts have been placed in chart form for each individual line and are inserted in Part II under "Proposed rerouting," pages 64–80. The complete figures for every line in the city, giving the loading and unloading by streets, are shown in tabular form in Appendix C, Part IV. The results of these counts show the predominating characteristic to be the heavy loading and unloading in a district within one or two blocks east or west of Woodward Avenue and between the river and Grand Circus.

All cities have a center, more or less defined, to and from which the heaviest daily traffic flows and ebbs. As they increase in size, other and secondary centers of traffic movement are established, and in some cases these grow in volume and density of travel to considerable importance. In Detroit the primary traffic center located in the district surrounding the City Hall has the common characteristics, accentuated in an unusual degree by the convergence of practically all the main thoroughfares to this point. The permanency and continuance of this district and the certainty of unavoidable increase of density of traffic movement is indicated by the modern character of the principal buildings and their occupation by practically all classes of the city's business activities. The extension of the retail district, north on Woodward Avenue and east and west on adjacent streets, together with the new group of office buildings and large hotels around the Grand Circus, must be regarded more in the nature of a growth of the city's present business section than the establishment of new centers.

All indications point to Detroit having to continue to face the problem, as the city grows, of constantly increasing density of pedestrian, vehicle and transportation activities at and near the present city center. The public demand has been and will continue to be for the operation of main arteries of traffic to and from this district and no system of diverting routes can materially affect this general movement.

RELIEF BY IMPROVEMENTS IN PRESENT SYSTEM

On account of the serious nature of the present delays and blockades, and the fact that relief by subway construction would entail several years' delay, we have devoted our attention first to methods of improving the present street railway system. This we propose to do by introducing new loading arrangements and by a complete rerouting of the lines over a system of loops in the downtown district.

There are lines at present routed in a manner unnecessarily obstructive to the general car movements in proportion to their own importance. There are also possible improvements in loading conditions and operating regulations which, taken together, will give decided relief from the present rush hour conditions.

We preface details of these recommendations with a general statement concerning the development of modern street railway operating conditions.

In the earlier days of horse car service it was not unusual for passengers to expect the cars to stop midway, or even at irregular intervals along the block to suit the convenience of each individual householder or storekeeper. As the distances became greater and the demand for more rapid service grew, the rule of stopping only at corners became necessary. As a further development, station stops came into use, and in a similar manner the use of transfer points and the abolition of through service has been proven necessary in many cities in this country and Europe. It is now recognized that rapid transit conditions affect such a large proportion of the traveling public that the inconvenience of a few, in walking short distances or changing cars in order to complete their trip, is not only warranted, but necessitated by the growing density of traffic on the highways of our larger cities.

Some years ago it was possible for practically all the car lines of Detroit to pass the City Hall or vicinity without seriously interfering with one another. Today Detroit has grown to such a size, and the number of people habitually passing to and from the business districts has reached such proportions, as to necessitate a correspondingly progressive change in the transportation system.

Many complications now exist in routing, transferring, etc., arising from different rates of fare and a perpetuation of other franchise limitations of the constituent companies of the Detroit United Railway. There is also a complicated question of expiring franchises affecting practically all lines in the city. Any plan for relief by improvement of the present system must involve these matters as well as the physical construction of new tracks and possibly the abandoning of others. The occupation of new streets by tracks, the taking of some public property for transportation purposes, and the vested rights of the street railway company will also be involved.

In making the following recommendations, we have assumed that all of these questions can be satisfactorily dealt with by you, and, where necessary, legal authority will be obtained for placing them in effect, provided the solution offered meets with your approval.

PROPOSED REROUTING OF SURFACE LINES IN CONGESTED DISTRICT

As previously pointed out, the primary cause of the congestion and street car blockades is the complicated set of crossings at grade combined with the rush hour loading, vehicle and pedestrian conditions.

Between 5:00 and 6:00 P.M., the maximum 1913 weekday schedule showed 205 cars south bound and 189 cars north bound on Woodward Avenue over the crossing at Michigan Avenue, and the same number one block south over the Fort Street crossing. At the same time, on Griswold—a parallel street only one block west—there were scheduled 89 south bound and 126 north bound cars over the Michigan Avenue crossing, and 95 south bound and 132 north bound over the Fort Street crossing.

Both these heavy north and south car movements were crossed directly on Michigan Avenue by more than 100 cars per hour in each direction, and on Fort Street by 52 west bound and 56 east bound cars.

When in connection with the above it is noted that these crossings constitute the 4 corners of the City Hall block and that crossings of only slightly less car frequency occur on Woodward Avenue and Griswold Street, on both the adjacent streets north, and on two of the three adjacent streets south, the seriousness of the problem is obvious.

Observations of the time lost on the principal lines by reason of crossing interferences during the rush hours showed that on Woodward Avenue the north bound cars during the rush hour from Fort to State Street consumed 2 minutes 59 seconds on an average, of which 59 seconds, or practically one-third, was unnecessary crossing delay. The east bound Michigan and Baker cars between Wayne and Farmer experienced crossing delays of 3 minutes 54 seconds out of an average running time of 7 minutes 42 seconds, the west bound cars of the same line being delayed 1 minute 56 seconds in a running time of 5 minutes 8 seconds. This lost time does not express or indicate the period of blockade of cars, which is cumulative as soon as they begin to line up one behind another, but is the actual time lost by one car between the points mentioned.

More than 50% of the Fort Street cars, as at present operated, cross Woodward Avenue only for the purpose of looping around Cadillac Square. Thus in order to simply turn the cars the Woodward Avenue traffic is crossed twice, and the Fort Street traffic, by reason of taking the loop right-handed, crosses itself on the east side of Woodward Avenue. A great majority of the passengers load on these cars at the Woodward Avenue end of the loop and a considerable proportion of them walk east to intercept the empty cars on this loop.

Further complicating the city street car crossings is a system of heavy interurban cars turning in and out over these same intersections.

The necessity of carrying the north and south lines through to the waterfront is clearly indicated by the preponderance of the car movements on these lines, as shown by the schedules just referred to, and by the greater volume of passenger traffic determined from our series of counts. We provide, therefore, as shown on MAP 5, for the looping of the east and west lines on either side of Woodward Avenue and the continuing of the main north and south lines through to Jefferson Avenue or the river. On page 59 will be found a diagram illustrating the legitimate through traffic on the Baker, Michigan and Sherman lines, showing that only 39 out of the 112 cars per hour on these lines at present routed across Woodward Avenue during the evening rush are really required. (Details of these conditions are given on pages 58–60.)

Complete detail descriptions of this rerouting will be found in Part II, pages 57–62. A direct comparison between the present and proposed routings of street car lines by routes in the congested district is shown on MAP 5.

The rerouted plan provides for continuing the present through service for the principal east and west lines, to be run via State, Congress or Larned, but restricted closely to the needs of the through traffic; the balance of the car service on these lines to be looped around the City Hall on one side of Woodward Avenue and through Cadillac Square on the other. The division

of the total number of cars into through and looped service, as indicated on maps, diagrams and tables in this report, is based upon extended passenger counts.

In order to indicate the degree of relief that will be obtained from the rerouted system by the elimination of conflicting crossings, and a more uniform distribution of the cars over the available main thoroughfares, MAP 9 has been prepared. This shows by companion diagrams the maximum 1913 car service on all lines routed through the downtown district by the present and proposed methods. The widths of the black bands indicate the number of cars per hour in each direction on a given street for each block, the arrows and figures showing numerically the direction and the number of cars per hour between 5:00 and 6:00 P.M. These two diagrams represent exactly the same car service to and from the center of the city, the only difference being that the rerouted plan distributes the lines on different streets, and loops back the cars which are not legitimately required to cross the congested district for the accommodation of through traffic. Part of the reduction in car crossings is obtained by three loops turning back at Grand Circus and Cadillac Square a proportion of the cars of the Woodward and Hamilton Avenue lines, carrying through to the river and to Third and Jefferson Streets only such cars as are actually necessary for the accommodation of traffic in these districts. Further relief is obtained by using only right-angle crossings and eliminating the turning in and out of cars on to heavily loaded routes.

An important feature is the change in the interurban lines, which are now one of the worst elements in the problem, traversing as they do the heaviest lines directly through the worst part of the congestion. MAP 10 shows the present and proposed interurban routing in black lines, superimposed on the traffic density diagrams printed in a light tint. The proposed interurban transfer, in the east end of Cadillac Square adjacent to the looped city lines, is much more convenient than the present one and is reached by all lines without crossing or conflicting with the heavy city street car, vehicle or pedestrian traffic.

The space occupied by these interurban tracks and the city loop tracks in the west end of Cadillac Square is less than the space between the present Fort Street loop tracks, which latter are to be taken out.

The rerouting plan aims to reduce to a minimum the delays from the crossing and other forms of interference while maintaining as closely as possible the present general functions of each line. On the Jefferson line, car crossings are reduced by 50%; on the Michigan line, 56%, and on the Woodward line, 75%.

The companion diagrams of MAPS 5 and 9 show clearly the flexibility of the rerouted system. MAP 5 shows the rerouted lines in the congested district individually, each being represented by a different color or symbol, except where passing around a common loop at the City Hall or through Cadillac Square. The rerouted plan provides a wider distribution of the transfer points for intersecting lines approaching and leaving the heart of the city, tending to distribute and equalize the transferring operations and

to separate them from the direct loading and unloading at and along Woodward Avenue and Griswold Street.

A detailed description of each of the rerouted lines, with companion diagrams for the downtown district showing the present routing and proposed rerouting, will be found in Part II, pages 81–115.

The proposed rerouting will be a permanent improvement in the system of operation, by reason of the lines using independent loops in the downtown district. The elimination of a large portion of the conflicting crossings will make a fundamental advance in overcoming, not only the present, but future increased street congestion. Freed from the conflicting crossings, the blockades and delays on any of the independent radiating lines will not affect the other lines, as is the case today. The rerouting permanently relieves the worst of the present bad street car interferences in the entire congested district. The equivalent relief would not be obtained by either a single north and south or east and west subway. The importance, therefore, of the rerouting plan, whether a subway is subsequently built or not, is very obvious.

An inspection of the rerouted track system in connection with a Woodward Avenue subway station at the City Hall (see diagram on page 118) shows the convenient relative location of the surface and subway cars for transfer of passengers.

An estimate of the necessary track changes, repaving, curbing, sidewalk and other items involved in this complete rerouting plan for the congested district as shown on MAP 7 amounts to $400,000.

Where street car congestion becomes as acute as in Detroit it is necessary to minimize every element of delay. The capacity of any line where the principal traffic is in one direction is limited by the number of cars which can be operated. Increasing the number of cars to reduce crowding only tends to make conditions worse, unless running time, stops and crossing delays can be reduced. The scheduled speed, however, can be increased by the use of two-car units and by reducing the number of stops. Experience has shown that a two-car unit, consisting of either two motor cars or a motor and a trailer coupled together, can be operated over a crossing with very much less interference than two cars independently controlled.

The experience in other cities where double unit and skip-stop operation has been adopted has demonstrated the value of this system, it being found possible to maintain the same or a better schedule time with from 30% to 50% more passenger capacity. It is this possible added capacity which will make the use of two car units valuable on Detroit's overcrowded street car lines.

IMMEDIATE RELIEF WITHOUT TRACK CHANGES AND INVOLVING LITTLE COST

As the relief by rerouting and two-car units just described involves the expenditure of a considerable amount of money and negotiations covering franchise extensions, legal questions and matters of public policy, the following additional improvements are grouped separately in order to point out that

a measure of immediate relief may be obtained without changing the existing tracks or involving other complicated questions.

A number of the existing street car lines can be slightly diverted from their present route so as to avoid particularly bad crossing movements without inconveniencing the public.

The Brush Street line north bound can be run via Bates and Farmer to Monroe, avoiding the bad Michigan-Woodward Avenue crossing.

The Rapid Railway interurbans can be routed down Woodward and looped the same as the Pontiac and Flint cars, returning via Congress, Bates and Farmer to Monroe.

By running Hamilton Avenue "trippers" south bound via Shelby Street to Jefferson during the P.M. rush, Woodward Avenue would be materially relieved.

The Detroit, Jackson & Chicago interurban cars and the Orchard Lake line can be routed via Shelby to Jefferson east bound, relieving the Michigan-Griswold crossing.

Further relief must be effected by regulation of the existing crossings. The car movements can be accelerated at the crossings by insuring prompter starting upon the giving of the traffic signal, through the use of street collectors. By receiving fares and loading passengers at the front doors of the cars and by cutting off the loading when necessary, and dispatching the cars, a great improvement can be made. This recommendation was offered by us in December, and the results obtained on Woodward Avenue have been extremely satisfactory. A further extension of this use of collectors at some others points during the rush hour will be equally beneficial. Moving the east and west cars over the Woodward Avenue crossings as promptly as the collectors have shown possible with the north bound Woodward cars at Fort, Michigan and State Streets, will materially increase the general capacity of the system.

The loading delay can also be reduced by removing the division rail on the rear platform of the pay-as-you-enter cars at heavy loading points, thus allowing passengers to board the car at both rear doors.

The unusually heavy vehicle traffic, which like the street car routes is either destined for or passes through the heart of the city, is a very considerable factor in the problem presented by the present congestion. In general, relief will be obtained by diverting the automobile traffic from the thoroughfares traversed by the heavier street car lines, particularly Woodward Avenue. By traffic regulations and improvements in paving and lighting a large proportion of these vehicles can readily be diverted to other streets, such as Cass Avenue and John R Street. In addition, we have indicated on MAP No. 6 a possible improvement in the downtown routing of vehicles to harmonize with the rerouted car lines. This subject is fully treated in Part II, pages 125–126.

DEGREE OF RELIEF BY REROUTING, TWO-CAR UNITS, SKIP STOPS, ETC.

The removal of crossing interferences, the use of two-car units, together with skip-stops and vehicle regulation and diversion should increase the street car capacity on Woodward Avenue, in all probability, in the neighborhood of 50% over what is at present possible. Together with this increased capacity would go a certain amount of improvement in running time and general regularity in operation.

On the Michigan, Gratiot and Fort Street lines the introduction of these same improvements would probably give an equal added capacity. On the Grand River-Jefferson line probably not over 30% could be secured.

With the development of this 50% of additional traffic must come increased pedestrian and vehicle densities in the congested district. In general, it is probably safe to estimate upon 40% increase in travel before the total traffic interferences will again produce considerable car delays in the central district.

For how long a period this relief by the rerouting and attendant improvements will last is, of course, entirely dependent upon the future growth of Detroit. That eventually the growth of the city and the further building up and enlargement of the business district will produce a density of pedestrians and vehicle traffic, together with a volume of street car passengers that cannot satisfactorily be handled by a surface system, we believe is inevitable.

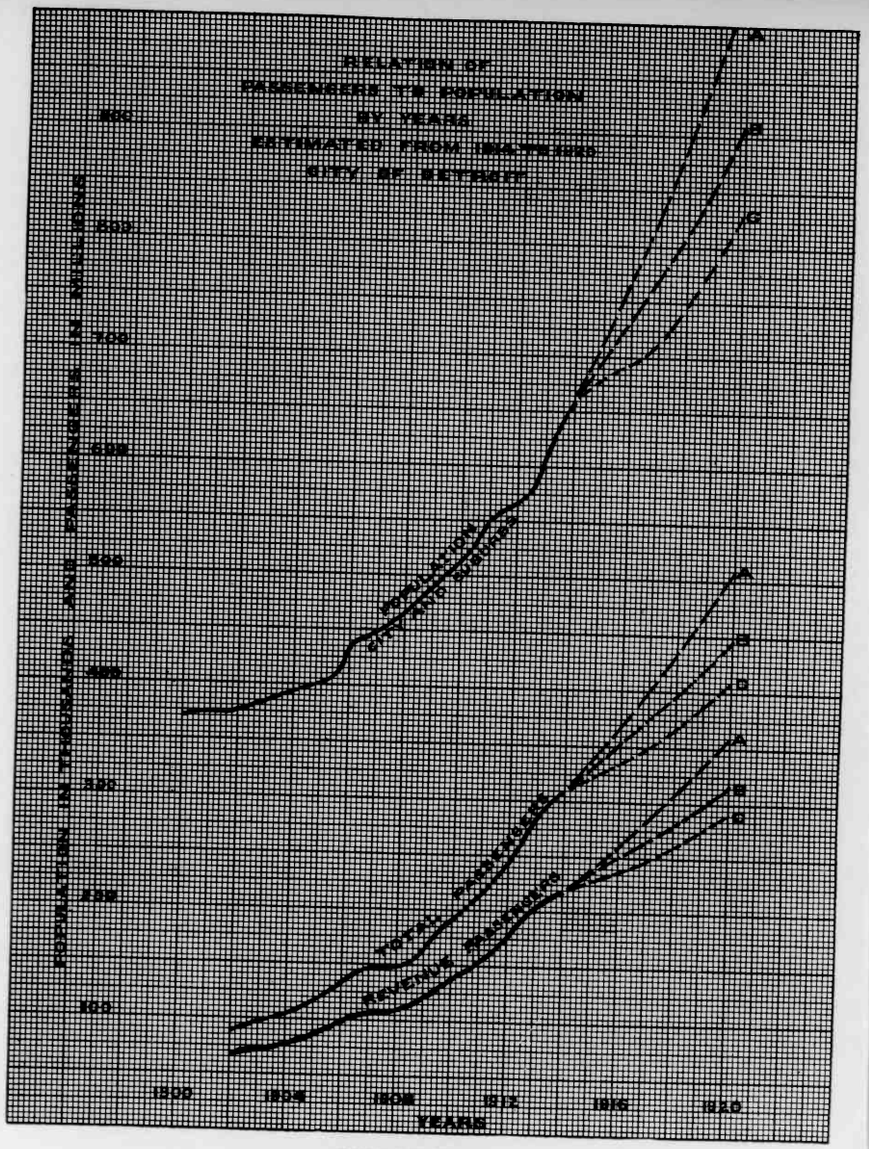
SUBWAY

The rerouting and the other improvements suggested for the present street car system will afford a decided measure of permanent relief and give a much needed increased capacity. However successful these improvements may be at the start, the continued growth in population of Detroit must at no very distant day call for further progressive improvements and increases in transportation capacity if the resulting continued traffic growth of the city is to be met satisfactorily.

The rate of growth of Detroit during the past few years if maintained will bring the population of the city and suburbs up to the 1,000,000 mark by the next Federal census of 1920 or shortly thereafter. Since the rides per capita in a city increase with the growth in population, the street car traffic for the whole city and suburbs when the 1,000,000 population mark is reached will probably approximate 500,000,000 total rides per annum.

How is this increase to be handled? The answer most easily made is, "By a subway," but before accepting this answer two other questions must be asked: Will a long subway be warranted or advisable for Detroit when its population reaches 1,000,000 people, and if a long subway will not, what sort of a subway, if any, will be warranted?

Mere size of a city does not in itself necessarily justify the high expense of subway construction. In London, where subways were begun fifty years ago, they are only just now making a return upon the capital invested. In Chicago, with a population of about 2,500,000, subways have not been at-



EXPLANATION

Solid lines plotted from actual statistics; dotted lines estimated.

POPULATION:—Extension A, on basis of average rate of increase of past two years. Extension B, ditto past ten years. Extension C, two years depression followed by resumption of normal increase.

PASSENGERS (REVENUE AND TOTAL). Extensions A, B and C estimated on basis of corresponding A, B and C population increase.

tempted, the rapid transit system adopted being elevated lines, capitalized at about $500,000 per mile of single track, or less than one-half the estimated cost of a subway in Detroit. The financial success of the New York subway is not due entirely to the size of the city, but to its geographical conditions and the distribution of the residential, commercial and amusement centers. An important factor is also the extensive suburban residence districts entirely outside of New York city, from which a large daily commutation traffic is delivered to the subway for local distribution. These elements, particularly the large suburban population, are essentially absent in the Detroit situation.

Of the various street car lines in Detroit, Woodward Avenue stands out preeminently, not only as the line of heaviest travel, but the one that has attracted to itself the greatest ratio of increase. In 1904 the total number of passengers carried on the Woodward Avenue line was 12,990,027 and was exceeded by three lines in the city—Michigan, Jefferson and Fort—whereas in 1914 the Woodward Avenue line carried 47,467,294 total passengers, or more than any other route. Its density of traffic or average number of passengers per mile of single track had grown to over 3,000,000 total, or nearly twice that on the Michigan Avenue line, its nearest competitor. Therefore, if any street in Detroit is to be selected as the location for a subway Woodward Avenue is without question the one.

In the following discussion, two classes of subway are referred to; namely, a long subway, by which is meant one that will have an independent train service of its own, or a short subway, by which is meant a section of subway providing for underground street car operation in the congested district.

If a subway with a special train service is to be built on Woodward Avenue it should extend from near the river front far enough north to develop a reasonably long-haul travel and reach a territory of sufficient extent to build up a traffic of its own. On MAP 11 is shown such a subway, the main portion double-tracked from the City Hall to Manchester or Victor Avenue, and with a single track loop on Fort, Shelby, Jefferson and lower Woodward Avenue. Such a subway is described in detail in Part II, pages 116–124 and illustrated by drawings, maps and plans in Part IV, numbers 12 to 21 inclusive.

This long subway, with stations about one-third of a mile apart from Grand Circus north and closer together on the lower and loop section, together with a special car equipment particularly designed for this class of service and including interest during construction, land damages, engineering, etc., will cost about $16,300,000. (For details see Part II, page 124.)

The length of this subway from Jefferson to Victor is about 6 miles, with a total of single track, including the loop, of 12.34 miles.

The traffic on Woodward Avenue for the year 1914 was 35,573,351 revenue passengers or 47,457,294 total passengers, including transfers. In order to determine the length of ride of these passengers on this line as a guide to the proportion that would probably use a subway, an extended investigation was made during the month of November, 1914. From the data obtained, the following percentages of the total riders traveling various distances from 1 mile to 6½ miles was determined:

Length of Haul North Bound on Woodward Avenue Line, 1914

1.4%	of total	number	of	passengers	ride	over 6½	miles
5.7%	"	"	"	"	"	6 to 6½	"
7.3%	"	"	"	"	"	5 to 6	"
13.1%	"	"	"	"	"	4 to 5	"
13.2%	"	"	"	"	"	3 to 4	"
16.4%	"	"	"	"	"	2 to 3	"
25.1%	"	"	"	"	"	1 to 2	"
17.8%	"	"	"	"	"	less than 1 mile	

Average haul.....2.8 miles

A complete tabulation of the passenger count from which this table is compiled is given in Appendix B, Part III.

The attraction and value of a subway system is in the saving of time and freedom from street traffic delays, and the longer the subway ride the more marked the time saving and the consequent popularity of the system.

Speed in a subway is obtained by spacing the station stops at long intervals, and the longer the intervals the greater the speed, but the fewer the people who are conveniently served. In practice, the most desirable station distance would seem to be about one-third of a mile. With stations at this interval an average person with a journey of less than two miles to make will not save enough time by the use of a subway train over the slower moving street cars to tempt him to walk to a station a block or two away. For a trip of a mile and a half or less the time consumed in walking to and from the station, descending and ascending stairs and waiting for a train will offset the saving made by the higher subway speed.

In New York the average length of ride on the elevated line is 4.16 miles and on the subway 5.57 miles. From the above count it is seen that the average haul on the present street car line on Woodward Avenue is 2.8 miles.

A careful analysis of the proportion of riders traveling various distances from 1 mile to 6½ miles does not indicate, on a basis of time saving, that more than 23,000,000 of the 47,457,294 Woodward Avenue 1914 passengers would have used the subway had such a one as just described been in existence. The 23,000,000 passengers would probably have averaged a haul of 3.82 miles. When, however, the population of Detroit reaches 1,000,000 people, the Woodward Avenue line will be carrying a greatly increased travel. The amount of this increased travel on Woodward Avenue will depend upon a number of circumstances, an important one being the time when the decision for or against a subway system is made. If no subway system on Woodward Avenue is decided upon and the city while growing to the 1,000,000 mark is left dependent upon street car transportation, the tendency will be to a relatively equal distribution throughout the city and suburbs of the three or four hundred thousand additional people. With this will also go a tendency to congest the population in the present city area in apartment and other compact forms of residences, changing completely the independent home characteristic of the city.

On this basis, at the 1,000,000 population period the Woodward Avenue surface cars, if no subway system had been built, would probably be carrying about 75,000,000 total passengers per annum.

It seems safe to say that when the travel on the Woodward Avenue line reaches the above figure, and with a total population of 1,000,000 people, the addition of a high speed subway system to Manchester Avenue would soon build up a condition resulting in a probable subway patronage of 50,000,000 total passengers per annum.

The entire subway calculations and estimates here made are based upon a transfer between the surface cars and the subway, just as is now done between various street car lines. The surface cars on Woodward Avenue are considered as a local service, and the subway—directly below them—as an express service.

As a general check on the previously estimated figures, the following table gives the revenue passengers per mile of single track for various city rapid transit systems:

Comparative Revenue Passengers Per Annum Per Mile of Single Track for Various City Rapid Transit Systems

City	Line	Number of revenue passengers per annum per mile of single track	Average haul, miles	Year
New York..	Subway	4,468,500	5.57 (1911)	1914
New York..	Hudson & Manhattan tubes	3,447,200	.....	1914
New York..	Elevated railways	3,049,800	4.16 (1909)	1914
Philadelphia.	Market Street subway	2,380,000	.....	1912
Chicago....	Elevated	1,145,000	.....	1911
Brooklyn...	Elevated	989,000	.....	1911
Detroit.....	Woodward Avenue street car	2,300,000	2.8 (1913)	1914
	Woodward Avenue subway (est)	2,240,000	.....	1920
	Woodward Avenue subway revenue and transfer (est)	3,060,000	3.82	1920

The high estimated traffic per mile of single track on the Woodward Avenue subway is due to the lack of real street car competition and the taking of the cream of the city's street car business for a comparatively short line, into which practically all other lines will feed. About 44% of the present passengers carried on the Woodward Avenue line transfer either to or from other street car lines. There is also to be considered that the outlying street car feeder lines with their transfer privileges are practically surface extensions of the subway, which unduly exaggerates the Detroit figures, compared with systems not giving such transfer.

On the basis of the Woodward Avenue traffic counts, this total number of passengers will be divided into 28,000,000 revenue passengers originating and completing their ride on the subway without transfer, 11,000,000 pas-

sengers originating on street car lines and transferring to the subway to complete their journey, and 11,000,000 originating on the subway and completing their trips by transfer to some street car line.

Taking the cost of the line as shown above at $16,300,000, and assuming that this investment will bear interest at 5%, the fixed charges and operating expenses of such a subway, including sinking fund, interest and taxes, will be about $2,000,000 per annum.

Earnings and Rate of Fare

In order to produce sufficient earnings from the 50,000,000 total passengers, to meet the expenses and fixed charges, from fares collected from the above mentioned 28,000,000 subway revenue passengers, together with 11,000,000 subway passengers taking a street car transfer and 11,000,000 passengers received by the subway by transfer from the street cars, it will be necessary to charge 5 cents for a single subway ride and 6 cents for a subway and street car transfer ride combined. In order to compensate the street car lines for their share in the haul, an allowance for the number of passengers originating on the street car lines must be made on the basis of 7 tickets for a quarter (the present rate of fare). On this basis the balance of the earnings to be credited to the subway would just meet the above $2,000,000 figure, leaving practically no profit. The above rate of fares would mean that a passenger would be required to pay 5 cents for a subway ride, as against 3.57 cents (7 tickets for a quarter) on Woodward Avenue surface cars. A subway and street car combination trip would cost 6 cents to a passenger as against 3.57 cents by surface cars under the present 7 for a quarter fare and general transfer privileges. The actual average receipt for total passengers carried in 1914 by the entire street railway system was reported by the company at 2.56 cents. The above subway rates of fare would tend to discourage the use of this system so as to postpone the realization of the 50,000,000 estimated traffic much beyond the periods of time here discussed. This subway traffic figure was obtained on a basis of time saving without allowance for an adverse discrimination in rates of fare.

To develop such a subway to its real capacity and maximum usefulness it should be possible to ride on it in connection with the other street car lines by universal transfer and equal fare. There is not a sufficient volume of long haul travel now in existence nor apparently in immediate prospect to support an independent subway service on a separate 5 cent fare basis.

In order, therefore, to make the street railways in Detroit, combined with a long subway on the heaviest traffic street, a financially self-supporting system, a material increase in fare over the whole city will be necessary.

Allowing sufficient capital expenditure for proper additions to the street car trackage, equipment, etc., and the above expenditure for a subway of $16,300,000, there would be required to meet the actual fixed charges and operating expenses of such a system, without profit, a uniform rate of fare of slightly over 4 cents per revenue passenger carried.

In order to provide a margin for unforeseen contingencies and a sufficient surplus to make such an enlarged traction system attractive for general investors, a uniform fare of 5 cents per revenue passenger would probably

be necessary. This fare would provide for the complete transfer privileges above referred to.

Questions of Public Policy

In addition to these traffic and revenue questions there are some other considerations of an economic character that should receive your attention before deciding upon the question of a subway policy.

The recent appraisal shows that the total reproduction cost, including franchises, of Detroit's railway system, with 206.88 miles of track, is about $26,000,000. An efficient, long subway will cost, as shown, about $16,300,000, or nearly two-thirds the value of the whole of Detroit's railway system and would give only 12.34 miles of additional track.

If this subway should be built it would result in further increasing the already noticeable tendency towards concentration of population and business activity along and adjacent to Woodward Avenue from Grand Circus north. This stimulus to the growth in population of this district would be greater as the distance increased from the center of the city. There would be a still greater ratio of growth in the district lying outside of the city limits, as the effect of the higher speed service would be to practically bring that district in point of time one-third nearer the center of the city than it is at present. Manchester Avenue, about central in the district known as Highland Park, would in this sense, in point of time, occupy the same relative distance from the City Hall as Philadelphia Boulevard, and unless Highland Park was taken into the city the increased values subject to taxes would be of no benefit to the city of Detroit. Furthermore, this concentration of increased value would be made somewhat at the expense of the other districts within the city limits.

This report has already called attention to the unusually even distribution of population throughout the city. As yet Detroit has not developed as extensively as other American cities the use of the apartment house. If Detroit and its suburbs are to have added to their population 340,000 people within the next six years and no radical change is made in the transportation lines of the city, a large part of these people will find their homes within the present city limits, and they will do as people in other American cities have done, begin to take up their residence in apartment houses of various kinds in order to live either within walking distance of their business or within a reasonable riding distance by the surface cars. This will mean that gradually the general character of the city will be changed from that of the individual home to a more dense and crowded condition.

It will be seen, therefore, that there is contained in the decision to build a long subway many serious questions of public policy. On the one hand, a change from the detached home to more crowded buildings, or, on the other hand, a postponement of this change by providing high speed facilities to carry the people to the outlying districts. In order, however, to support a long subway, either a general public contribution through increased fares on the entire railway system will be necessary or the deficit will have to be made up by taxation. This last objection can be met in part by some wise system of distribution of the benefits through a special assessment in some-

what the same way as the street openings and other general improvements are now assessed, either in part or whole, upon the property specifically benefited. Statistics from other cities showing increases in property value due to rapid transit lines are given in Part III, Appendix E.

The consideration of what has here been termed a "subway policy" involves the question of additional north and south street car lines to prevent the overloading of Woodward Avenue. If a subway is not to be built it will be necessary in the very near future to parallel Woodward Avenue on adjacent streets with street car lines from Grand Circus north. An inspection of MAP 1 shows at once the wide district on either side of Woodward Avenue served only by its surface car line. If a subway policy is to be adopted the concentration of this travel is necessary for the support of the subway, and, conversely, the building of parallel lines will postpone the necessity for and the financial possibility of a self-supporting subway. The same condition, in lesser degree, exists on practically all the principal radiating traffic lines of Detroit, and it must be kept in mind that even with a subway built on Woodward Avenue the density of traffic on Michigan, Gratiot and similar lines would in time necessitate the addition of other street car lines. This in turn will tend to bring about a recurrence of car congestion in the central district.

Short Subway

The previous discussion of a long subway has had as its object the development of the public questions directly involved in the consideration of a general subway policy for the city of Detroit. From a traffic standpoint, the natural first step would appear to be the construction of a short section of subway in the congested district.

The proposed rerouting of street cars will eliminate the existing congestion and provide an increase of perhaps 50% in passenger carrying capacity. As it appears, however, that the traffic is likely to be almost doubled within 6 years' time, it is obvious that some further additional relief must later on be provided in order to permit more cars and more car lines to reach the congested area.

A solution of this problem would lie in the construction of a subway loop for street cars, such as has been already described as the proper terminal for a subway line on Woodward Avenue. Relatively short street car subways of this kind have been employed with marked success in Boston, where some years ago on Tremont Street the congestion of the surface cars had become so intolerable as to be a nuisance to the traveling public and the abutting property owners, and a cause of actual loss in fares to the railway company. A subway was constructed, by which the surface cars on Tremont Street were put under ground and the entire electric railway operations removed from the street.

If a short subway is built and Detroit grows in the future at its past high rate, a volume and density of traffic may be concentrated on the section of Woodward Avenue north of Grand Circus warranting the building of a long subway on that street. For this reason, the short section of subway, although designed primarily for the operation of street cars, should be of proper dimensions for

later use by subway trains. Such a short subway is indicated in the drawings in Part IV of this report, showing a portal for the entrance and exit of street cars on Woodward Avenue at Grand Circus. While such a subway would have but little earning capacity, it would, nevertheless, be of relatively small cost, probably about $2,500,000, making an annual interest charge of $125,000. This investment would be of general benefit to all of the traveling public of Detroit, regardless of locality, as a permanent form of relief from the increasing street congestion.

Such a short subway is a logical step following the proposed complete rerouting of the surface lines, the rerouting tiding over the period necessary for the construction of the subway, as well as permanently improving the surface street car system. The convenient transfer facilities provided by the proximity of the surface loops to the principal subway station are indicated on the drawings, maps and plans in Part IV.

BELLE ISLE BRIDGE

The street car and traffic congestion at the junction of the Grand Boulevard and Jefferson Avenue is so bad on days of heavy traffic to the island that a radical change is obviously required. The necessity of separating the vehicle traffic east and west on Jefferson Avenue from the conflicting traffic to the island has led us to recommend an underpass for vehicles from the Grand Boulevard to the bridge approach. The heavy loading and unloading and transferring of passengers at this point to and from the street cars can only be relieved by removing these operations entirely from this point, leaving Jefferson Avenue free for its legitimate function as the principal east and west city thoroughfare in this district.

The situation is complicated by the inadequate capacity of the present bridge. Our recommendations include the construction of a bridge of ample capacity on this site, designed to carry through cars across to the island, where they descend by an incline track into a subway station below the surface of the park. Illustrations of the proposed method of carrying out this plan are shown in Part II, pages 127–130. The fact that we are able to offer a design which will not in any way mar the appearance of this beautiful park while yet increasing its accessibility to all classes of the people, and provide for the handling of great holiday crowds, is the justification of this recommendation.

These plans will be developed in full detail in connection with a complete preliminary design of the bridge and its approaches, which we have been engaged to prepare for the Park Commssioner of the City of Detroit and which we hope to perfect at an early date. A full discussion of this situation, with illustrations, will be found in Part II.

CONCLUSIONS AND RECOMMENDATIONS

As a result of our study and investigation of the history and present traffic conditions of Detroit, we respectfully submit the following conclusions and recommendations.

Detroit's street railway rush hour problem is essentially a case of unusual traffic concentration, due to a system of converging car lines loading and unloading the bulk of their passengers in a very limited central delivery district.

The permanent nature of this district and the distribution of the new population during the recent rapid growth of Detroit clearly indicate that the convenience of the traveling public will best be served by a continuation of their present main lines of travel.

Recommendations for Improvement of Existing Street Car System

We believe that immediate relief can be obtained from the present bad rush hour conditions and a permanent improvement effected by bringing the existing surface lines up to their maximum capacity and securing the greatest freedom for their movements in the congested district. To this end we make the following 13 specific recommendations, divided into two groups—A and B:

Group A. In this group are included those recommendations contemplating a complete rerouting of the existing car lines in the congested district which will require the alteration of some of the existing tracks, the addition of new curves and switches, and the laying of some short sections of new track. There is also included the addition of new equipment and the extension of certain of the present street car lines into districts obviously needing additional facilities.

1. The entire rerouting of the various lines entering the heart of the city should be undertaken at once by a system of loops to eliminate as far as possible the present crossing interferences. This will make possible the independent operation of the various lines to and from the center of the city without interfering with one another. This rerouting provides for the looping back of the cars not required for the carrying of the legitimate through traffic across the center of the city. A complete description of this rerouting will be found in Part II under the heading "Proposed complete rerouting of surface car lines," together with individual maps and detailed route descriptions of each line. The general arrangement of the loops and through lines is shown completely on MAP 5.

2. Two-car units on Woodward Avenue should at once be put in service during rush hours, to be followed, as traffic may require, on some of the other heavier lines.

3. In connection with the rerouting, additional car service should be provided on the lines at present over-crowded. This will be made possible under the freer system of downtown operation by the rerouted loops.

The use of larger car units on some of the lines now using the older types of cars is recommended, particularly during the rush hours.

4. Extensions of the existing Crosstown, Fourteenth, Warren and Grand Belt lines should be built.

5. A larger bridge at the present site, capable of handling the heavy traffic to Belle Isle and providing for the operation of through cars to the island, along the lines suggested in this report, should be built. The building of a second bridge at the east end of the island should be deferred until the pressing traffic needs at the present site are provided for.

Group B. This group includes improvements designed to give immediate relief from the rush hour congestion, which can be put in effect at once without track changes or the expenditure of any material amount of money. These we believe may be arranged for with the operating company without involving franchise questions or other complicated negotiations.

6. A system of station or skip-stops should be instituted on Woodward Avenue from Adams Avenue north; on Michigan Avenue from Abbott Street west; on Gratiot from Pingree Square east; on Jefferson Avenue from Randolph Street east, and on Grand River Avenue from Adams Avenue west; the alternate street corners being taken in one direction and the intermediate corners returning, the stops to be plainly marked by a broad band on the poles at the stop street corners, or by other suitable stop signs.

7. Street collectors should be used to load at the front doors of cars during the rush hour in the downtown district, in continuation of the successful service of this nature on Woodward Avenue already put in effect by the railway company at our suggestion during December, 1914.

8. A change should be made in the division rail on the rear platform of the pay-as-you-enter cars so as to allow of this rail being removed by the conductor at heavy loading points. By this means passengers can enter the car by both rear doors simultaneously, thereby cutting down the loading time materially.

9. Arrangements should be made to run special cars, without stop, through the crowds of factory workers on some of the main street car lines at certain times of the day to take care of the general travel at points beyond the factories, for the following reason: On account of the very large number of employees leaving the factories on a change in shift some of the main lines—notably Woodward, Hastings, Chene and Jefferson—for a short time practically suspend service to the ordinary traffic along the line. A number of regular cars run, as suggested, through this loading district without stop will provide for the patrons of the line boarding beyond the factories.

10. Provision should be made for special streets for vehicle traffic, such as Cass Avenue and John R Street, by improvements in paving, lighting and widening of the streets. In the case of John R Street, the moving back of the curb line is particularly needed, as well as the repaving of certain blocks where the surface is now very rough.

To encourage automobiles to use these streets there should be enacted suitable ordinances giving right-of-way to north and south bound vehicle traffic on Cass Avenue and John R. Street over the east and west vehicle traffic crossing from the intersecting streets.

Similar ordinances should be enacted for other main vehicle streets in other parts of the city.

11. An ordinance should be enacted providing for stopping automobiles with the street cars on Woodward Avenue north and south bound from Jefferson Avenue to Forest, to facilitate the safe and rapid loading and unloading of street car passengers.

12. Rigid parking regulations at the ends of the blocks near the safety zones should be enforced to facilitate loading operations and prevent delays to cars, as given in detail under "Vehicle traffic," Part II.

13. Pending the completion of track changes necessary for complete rerouting, certain interurban and street car lines should be rerouted to relieve some of the bad crossing conditions involved in the present method of operating these lines. Details shown in Part II, pages 113–115.

Recommendations Regarding Subway

Provision must be made for handling in the future during rush hours not only a much greater volume of traffic than at present, but one of greater density than now occurs at the congested center. The growth of the business district, together with the increased density of pedestrian, vehicle and street car movements will in time make demands beyond the possible limits of surface street car transportation.

Assuming that the growth of Detroit will continue to and beyond the 1,000,000 population mark and that its future importance as a great manufacturing center will be maintained, additional steps in the development of its transportation system should be prepared for, following and supplementing the rerouting and related recommendations just made.

These recommendations cover general subway policy, short subway street car loops, and long subways with special train service.

14. Immediate steps should be taken to procure all necessary enabling legislation and to remove all legal obstacles to permit of the prompt execution of whatever subway policy may be adopted.

15. Detail plans for a short subway loop to accommodate the Woodward Avenue and such other street car lines from the northern part of the city as can conveniently be brought to a portal at the Grand Circus, should be prepared at least two years in advance of the necessity for such subway. A subway of this kind must be looked upon as a means of relief for street traffic conditions and not as a source of revenue.

16. The designs and plans for the above short subway loop and all provisions connected with it should be made with a view to an ultimate use of this section of subway by special trains for rapid transit service when Detroit shall have grown to a point warranting the construction of a long subway with independent train service. All station platforms and other dimensions, as well as curve clearances, etc., can be arranged for temporary use by street cars and subsequent use by subway trains.

17. A general subway policy should be determined upon, outlining the city's position as to the building and financing of subways. This policy should include a decision as to whether subways are to be built on the city's credit as public improvements, in anticipation of traffic conditions which would make them attractive, self-supporting projects for private investment. Upon the decision reached in this regard the building of a long subway must depend, as at present the earnings to be anticipated within a reasonable period will not provide a self-supporting revenue upon present rates of fare. Either a direct tax upon the properties benefited must meet the deficit or the revenue per passenger carried by the whole system of street car and subway lines must be raised by a horizontal increase in fare over the whole city system.

PART II

COMPLETE DETAILS OF SUBJECT MATTER OF REPORT

CITY OF DETROIT

For the purposes of our report, treating of the transportation requirements and needs of the city of Detroit, further references to the city itself would seem to be limited to a study of the existing conditions and probable future growth. A clearer understanding, however, of the present conditions, as well as the likelihood of future changes will be gained by a brief but more detailed reference to the history and growth of Detroit.

General Characteristics

The city has grown from a settlement or group of settlements along the Detroit River and to-day many of the city property and ward lines follow generally the original long and narrow farm strips extending back from the river.

The territory covered by the city is practically level, the only grades being the abrupt rise from the river's edge, usually about 25 feet, and from that point the rise is very gradual toward the north. The highest point in the city limits is about 62 feet above mean river level four miles inland.

Detroit's general plan is of a radial type, the principal thoroughfares converging to a common center at or near the City Hall. The remaining streets are laid out, in a general way, on a rectangular plan, parallel with, or at right-angles to, the general east and west course of the Detroit River. These general characteristics of street arrangement have existed throughout the period of growth of the street railway system in Detroit. The main radial thoroughfares, such as Fort, Michigan, Grand River, Woodward, Gratiot and Jefferson originated in the highways leading from Detroit as a center to various other important points, such as Toledo, Flint, Pontiac, Saginaw and Port Huron. Upon these streets there must be handled to-day not only the street car traffic but an enormous and rapidly increasing vehicle traffic.

Location of Business and Factory Districts

The original importance of Detroit was its location as a shipping point on the Great Lakes route, the industries employing large numbers of men being then along the river front. As the city grew, the retail district built up along lower Woodward Avenue, this general condition continuing until the manufacturing industries reached their present importance. The greatest increase came within the past ten years as a result of the enormous growth of the manufacture of automobiles and automobile accessories.

This manufacturing growth took the form of a girdle of factories, in a general way, surrounding the older portions of the city of Detroit and following closely the belt lines of the steam railroads. The influence of this circle of factories lying about four miles radially from the city's center and surrounding to a great extent the principal residential districts has a material bearing upon the street railway traffic.

Growth of Population of Detroit

The first United States census, in 1773, shows a population of 1,367 for the settlement of Detroit (not including soldiers), from which the population has increased to about 660,000 for the city and immediate suburbs in the year 1914.

Population of Detroit by Decades

Year	City proper from U. S. Census	City and Suburbs	
		From City Manual	From U. S. Census
1773	1,367	.....	.....
1810	1,650	1,770	.....
1820	1,442	2,442	.....
1830	2,222	2,220	.....
1840	9,124	9,192	.....
1850	21,019	25,000	.....
1860	45,619	.....	.....
1870	79,603	.....	.....
1880	116,340	.....	.....
1890	205,876	274,500	.....
1900	285,704	374,000	318,967
1910	465,766	515,414	500,982
1913	.....	614,486	.....
1914	.....	660,000	.....

The rate of increase in population of Detroit has been steady and at times rapid, the periods of greatest growth being from 1880 to 1890 and from 1900 to 1910. Between these last census dates the growth was 63% for the city proper and 57.1% for the city and suburbs. From 1910 to date the increase has been at substantially the same rate as the previous period just mentioned, based upon the best obtainable city information.

Comparison with Growth of Other Cities

In order to appreciate more clearly this growth, a comparison is here shown by curves plotted for Detroit, Cleveland, Buffalo, Cincinnati and Milwaukee. These cities have been selected as being comparable by reason of location, size and general characteristics. The curves show that Detroit follows the same general growth through decade periods to 1900, and from 1900 to 1910 Detroit has outstripped all of the other cities except Cleveland, which it is rapidly overtaking in total population.

Growth in Area of Detroit

The growth of cities varies greatly, due to their geographical situation, topography and surroundings. New York (Manhattan Island) and San Francisco are restricted by large bodies of water and Pittsburgh by high hills and ridges. These two types are quite different from such cities as Detroit, Buffalo, Cleveland and Milwaukee, where the available area extends without restriction except in one direction. The map on the following page shows the city limits of Detroit at different periods.

From 1857 to 1875 the city limits comprised an area with a frontage on the river of about four miles, and extending north from the river about three miles. From that time to the present additions have been made resulting in a city lengthened along the river front to about 12 miles and extending at right-angles to the river along Woodward Avenue about five miles.

At the present time, from a transportation standpoint, the adjacent districts, such as Highland Park, Hamtramck, Grosse Pointe and River Rouge, must be taken into consideration. Having these districts in mind, the present extent of the area tributary to the traffic lines is 14 to 16 miles long parallel to the river and about 7 miles at right-angles to the river.

Density and Distribution of Population

The area, population and density are shown in the following table:

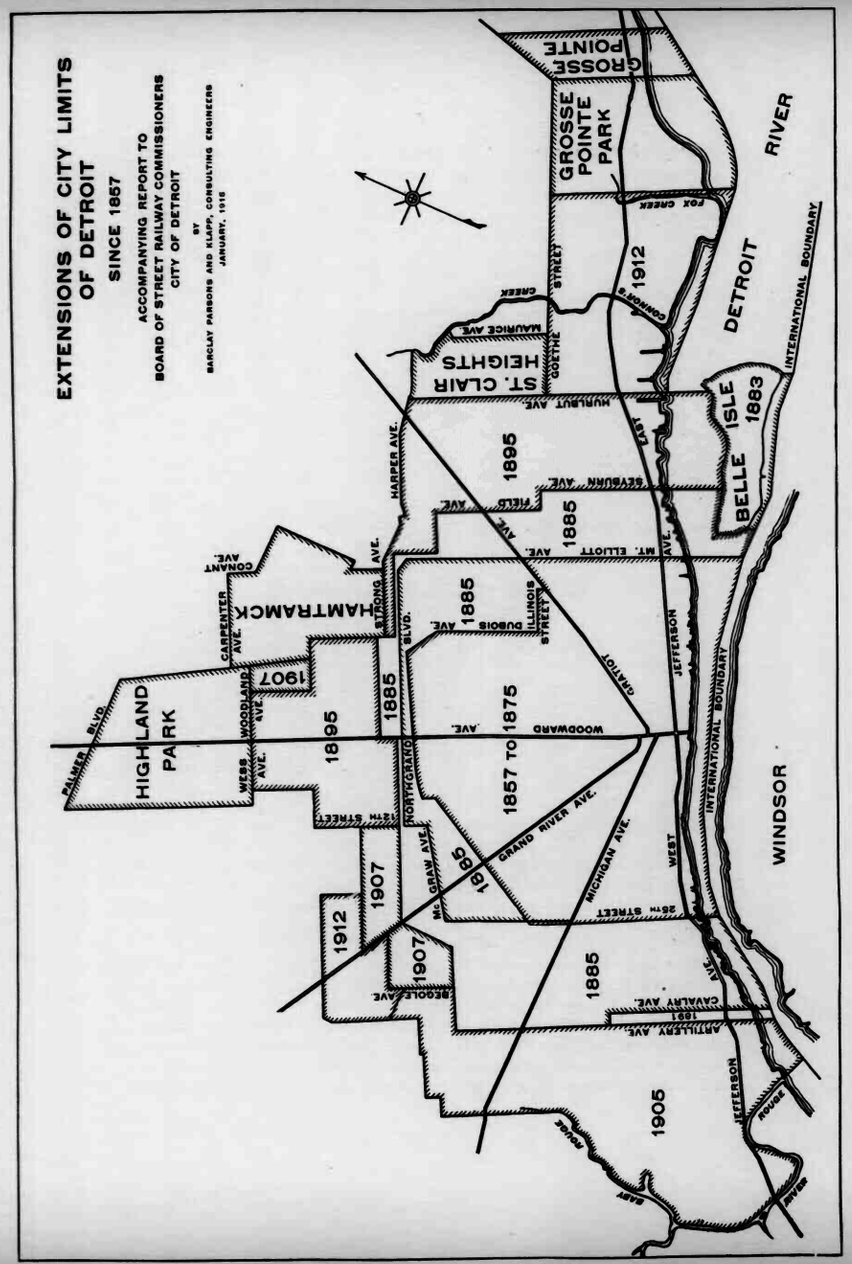
Population Density of the City of Detroit

Year	Area in square miles	Population by U. S. Census	Density per square mile
1820	1.36	1,442	1,060
1840	5.26	9,124	1,734
1860	12.75	45,619	3,578
1880	16.09	116,340	7,230
1900	28.35	285,704	10,077
1910	40.79	465,766	11,418
1913	41.76	597,468*	14,310

* Estimated.

The statistics of the surrounding suburban districts were not accessible for the early periods, and, therefore, the comparisons are confined to the area within the city limits. The relation of area to population shows an increasing density, usual in cities which have attained the size and dimensions of Detroit.

The distribution and the growth by districts of this urban population is of greatest importance in this present investigation. The results of a study of this subject are shown on MAP 3, giving the population of Detroit and suburbs by districts. The city proper is divided into rectangles of ½ mile by ½ mile. In each rectangle is shown graphically by shaded areas the relative population for that section for the years 1904, 1907, 1910 and 1913; the population being shown in figures on or beside these areas. Similar information has been shown in the suburban districts, giving the total for each town on the same scale as for the



rectangular areas in the city. It was impossible to obtain data for dividing these suburban communities into rectangular areas, so that the shaded areas and figures give the total for the whole suburb.

This distribution of the population of the city of Detroit was compiled by the use of city directories, applying residence factors taken from the United States Census for each district. These computations were checked against the school, state and ward censuses and various other available sources of information. The total population of the city compiled by the above method for 1910 checked within from 1% to 3% of the United States Government Census.

The greatest rate of growth is shown in the outlying and suburban districts, but a very general increase is apparent in all parts of the city, excepting some of the older districts. This is particularly noticeable along the water-front, where business is crowding out the residences. The extreme outskirts of the city, where street opening and general improvements have not been general, are also below the average. The decrease in population of the township of Springwells is apparent only, being due to the inclusion of parts of its territory within the city limits as extended from time to time. (See MAP page 34.)

The densest populated area in Detroit lies in the district east of Woodward Avenue and bounded generally by Jefferson on the south, Canfield on the north, and Mt. Elliott on the east. Within this area the population ranges from 35,000 to 53,000 per square mile, which is not high for a city of 600,000 people. Farther away from the heart of the city the population becomes less dense, decreasing to from 15,000 to 20,000 per square mile, and in the suburban residence districts much lower. Within the limits of the present town of Highland Park the population is about 5,000 people per square mile; Hamtramck being nearly 6,000 per square mile, and the other suburbs somewhat less. These densities are not unusual but are representative of conditions in most American suburbs of this class.

The most striking characteristic of the population of Detroit is its markedly regular distribution as compared with other cities. Another predominating feature is the large number of individual detached homes.

Roughly speaking, 70% of the population of the city is included within the belt line railways, or what we have termed the "girdle of factories." The future growth of the city must be looked for in the outlying and suburban districts and in a change in the nature of the older residence districts where already individual homes are being replaced by the erection of apartment houses.

These facts regarding the growth, distribution and density of population are closely connected with the development of the main lines of traffic. The quality and extent of service on the traffic lines in turn affects the distribution of the population.

Industrial Growth

The first manufacturing census of the United States was taken in 1899, and additional censuses in 1904 and 1909. The labor department of the State of Michigan took a similar manufacturing census in 1913 for the city of Detroit.

The following tables, based on the above authorities, show statistics for the city of Detroit, giving the value of various articles manufactured and also manufacturing statistics of Detroit compared with 4 other cities of similar type and

approximately the same size. These show that Detroit in 1899 had manufactured products of less value than any of these cities. By 1909, however, the value of Detroit's manufactured products had increased in amount beyond all except Cleveland. The rate of increase in Detroit from 1899 to 1909 was 188%, Cleveland in the same period increasing only 95%, Buffalo 107%, Milwaukee 88%, and Cincinnati 37%.

Of this total increase in the value of manufactured products for Detroit, 36% was in automobiles and automobile accessories, the money value rising from practically nothing to $60,000,000 in the 10-year period. The 1909 census also shows that Detroit produced approximately 24% of the total value of all automobiles manufactured in the United States. In 1913 the total manufactured products of the city were valued at $410,000,000, of which $208,000,000 represented automobiles and accessories, this being 52% of the money value of the entire automobile output of the United States.

The stability and permanence of the automobile industry must therefore be given serious consideration in any estimate of the future growth in commercial importance and population of Detroit.

Statistics of Manufactures in Detroit

	Census year	Number of establishments	Total persons engaged	Capital invested	Salaries and wages	Value of products
Automobiles and parts	1909	68	17,437	$28,928,000	$11,402,000	$59,536,000
	1904	19	2,191	3,447,000	1,127,000	6,240,000
	1899	...	....	.....	.....	.....
Brass and bronze products	1909	37	4,374	7,306,000	2,510,000	12,297,000
	1904	23	2,199	3,430,000	1,197,000	5,682,000
	1899	17	883	1,039,000	418,000	1,633,000
Copper, tin and sheet iron products	1909	72	2,152	3,890,000	1,009,000	3,534,000
	1904	28	1,374	1,274,000	603,000	2,258,000
	1899	18	....	294,000	155,000	655,000
Foundry and machine shop products	1909	215	10,212	20,434,000	6,241,000	18,296,000
	1904	125	7,194	9,003,000	4,191,000	13,647,000
	1899	106	....	12,223,000	4,724,000	12,714,000
Furniture and refrigerators	1909	33	2,528	3,203,000	1,443,000	3,762,000
	1904	24	2,119	2,496,000	1,000,000	2,624,000
	1899	22	1,564	1,420,000	679,000	1,865,000
Liquors, malts, etc.	1909	18	838	5,208,000	745,000	4,942,000
	1904	19	618	3,977,000	541,000	3,272,000
	1899	20	539	2,800,000	390,000	2,593,000
Lumber and timber products	1909	59	2,322	4,608,000	1,254,000	6,110,000
	1904	30	1,166	1,435,000	661,000	2,167,000
	1899	43	....	1,444,000	514,000	2,204,000
Patent medicines and druggists' preparations	1909	74	4,289	10,179,000	3,181,000	11,558,000
	1904	42	3,189	7,912,000	1,721,000	9,423,000
	1899	34	....	3,693,000	1,374,000	6,176,000
Slaughtering and meat packing	1909	29	983	3,340,000	571,000	12,850,000
	1904	11	486	1,251,000	279,000	5,350,000
	1899	16	417	1,185,000	238,000	4,080,000

Comparative Statistics of Manufactures and Industries

	Census year	Number of establishments	Persons engaged	Expressed in thousands of dollars			
				Capital invested	Salaries and wages	Value of products	Value added by manufacture
Detroit	*1913	2,534	156,687	.....	.....	410,000	.....
	1909	2,036	95,841	190,125	58,267	252,992	122,774
	1904	1,362	55,718	91,038	28,684	128,247	61,666
	1899	1,259	.....	67,224	20,043	88,366	41,359
Cleveland	1909	2,148	98,686	227,397	63,559	271,961	117,046
	1904	1,616	72,362	156,321	41,749	171,924	74,346
	1899	1,350	.....	101,243	31,971	139,356	62,891
Buffalo	1909	1,753	61,246	193,041	38,074	218,804	82,266
	1904	1,538	50,390	137,023	27,164	147,378	59,011
	1899	1,478	.....	95,740	19,107	105,627	39,688
Milwaukee	1909	1,764	68,933	219,391	40,842	208,324	87,703
	1904	1,527	49,843	161,494	26,646	137,995	66,892
	1899	1,419	.....	105,504	21,407	110,854	51,160
Cincinnati	1909	2,184	72,488	150,254	43,860	194,516	92,584
	1904	2,171	68,954	130,272	36,467	166,059	82,801
	1899	2,454	.....	103,464	29,541	141,678	70,287

* Estimate State Labor Department of Michigan.

PRESENT STREET CAR SYSTEM

General Conditions

The first effort toward public transportation in Detroit was instituted in 1847 with an omnibus line on Jefferson Avenue. This was a financial failure, but in 1853 the line was reëstablished. The population of the city of Detroit at that date was given by the United States census as 41,375.

The first street cars were introduced in 1863 and were horse drawn. From this time on additional horse cars were added until 1893, when the period of electrification commenced. Since that date the overhead type of direct current street railway equipment has progressed through the usual stages until to-day Detroit is operating double truck, pay-as-you-enter cars on its principal lines.

The present entire street railway system of the city is operated by the Detroit United Railway under a unified management. This company also owns, controls and operates the various interurban lines entering the city of Detroit. The history and growth of the various city lines is not pertinent to this investigation other than as a matter of record, except in so far as some of the peculiarities and limitations of the constituent companies are retained in the existing system. The following "family tree" shows the constituent companies forming the Detroit United Railway and the date of their incorporation and consolidation.

Limitations of Constituent Companies

The continued existence of different rates of fare and different transfer privileges on various lines is detrimental to the general service, as tending to divert traffic from its normal channels and to crowd parts of certain lines. There is also a continuation of occasional indirect routings of cars in order to avoid running them over the "3c lines," and complicated questions of expiring franchises, affecting in some cases only portions of certain tracks.

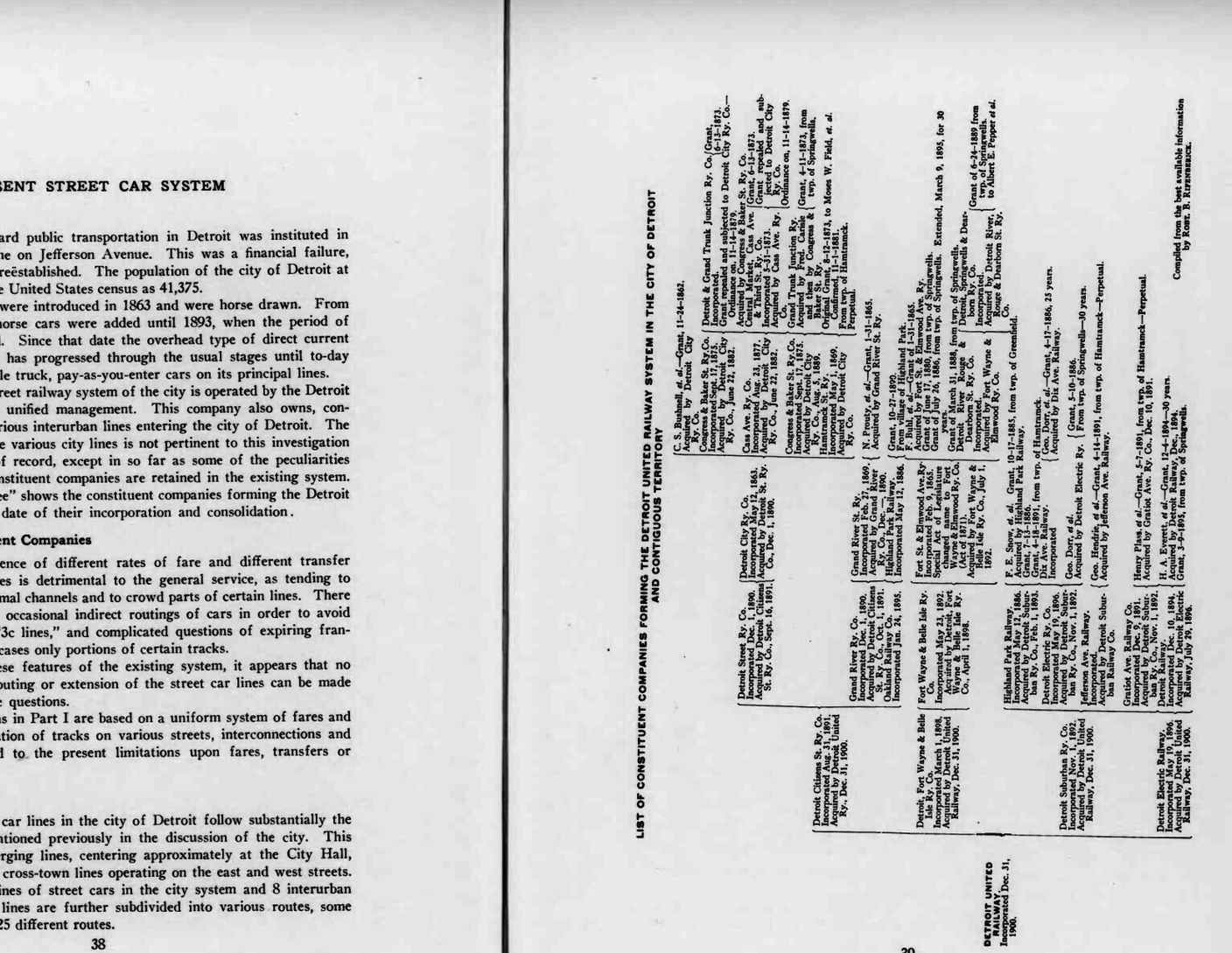
After examining these features of the existing system, it appears that no permanent, adequate rerouting or extension of the street car lines can be made without eliminating these questions.

The recommendations in Part I are based on a uniform system of fares and transfers, and the utilization of tracks on various streets, interconnections and additions without regard to the present limitations upon fares, transfers or franchises.

Present Car Routing

The principal street car lines in the city of Detroit follow substantially the main thoroughfares, mentioned previously in the discussion of the city. This gives a system of converging lines, centering approximately at the City Hall, and a smaller number of cross-town lines operating on the east and west streets. There are 20 principal lines of street cars in the city system and 8 interurban lines. The 20 principal lines are further subdivided into various routes, some lines having as many as 25 different routes.

LIST OF CONSTITUENT COMPANIES FORMING THE DETROIT UNITED RAILWAY SYSTEM IN THE CITY OF DETROIT AND CONTIGUOUS TERRITORY


C. S. Bushnell, et al.—Grant, 11-24-1862.
Acquired by Detroit City Ry. Co.
Congress & Baker St. Ry.Co. Incorporated Sept. 17, 1873. Acquired by Detroit City Ry. Co., June 22, 1882.
Detroit & Grand Trunk Junction Ry. Co. (Grant, 6-13-1873. Incorporated, and subjected to Detroit City Ry. Co.—Ordinance on, 11-14-1879.
Detroit Street Ry. Co. Incorporated Dec. 1, 1890. Acquired by Detroit, Citizens' St. Ry. Co., Sept. 16, 1891.
Detroit City Ry. Co. Incorporated May 12, 1863. Acquired by Detroit, Fort Wayne & Belle Isle Ry. Co., Dec. 1, 1900.
Cass Ave. Ry. Co. Incorporated Aug. 23, 1877. Acquired by Detroit City Ry. Co., June 21, 1882.
Grand River St. Ry. Co. Incorporated Feb. 27, 1869. Acquired by Grand River St. Ry. Co., Dec. 1, 1890.
N. Prouty, et al.—Grant, 1-31-1865. Acquired by Grand River St. Ry.
Congress & Baker St. Ry.Co. Incorporated Sept. 17, 1873. Acquired by Detroit City Ry. Co., Aug. 5, 1889.
Grand Trunk Junction Ry. Acquired by Fred. Carlisle and Assn. by Congress & Baker St. Ry.
Original Grant, 8-12-1873, to Moses W. Field, et al. Incorporated May 1, 1869. Acquired by Detroit City Ry. Co.
Grant, 4-11-1873, from trp. of Springwells.
From trp. of Hamtramck. Perpetual.
Detroit Citizens St. Ry. Co. Incorporated Aug. 31, 1891. Acquired by Detroit United Ry., Dec. 31, 1900.
Grand River Ry. Co. Incorporated Dec. 1, 1890. Acquired by Detroit, Citizens' St. Ry. Co., Oct. 1, 1891.
Oakland Railway Co. Incorporated Jan. 24, 1895.
Highland Park Railway. Incorporated May 12, 1886.
Grant, 10-27-1890. From village of Highland Park.
Detroit, Fort Wayne & Belle Isle Ry. Co. Incorporated March 1, 1898. Acquired by Detroit United Railway, Dec. 31, 1900.
Fort Wayne & Belle Isle Ry. Co. Incorporated May 23, 1892. Acquired by Detroit, Fort Wayne & Belle Isle Ry. Co., April 1, 1898.
Fort St. & Elmwood Ave. Ry. Co. Incorporated Feb. 9, 1865. Special Act of Legislature (Act of 1871). Acquired by Fort Wayne & Elmwood Ry. Co., July 1, 1892.
Fort St. & Elmwood Ave. Ry. Co. Acquired by Fort Wayne & Belle Isle Ry. Co., July 1, 1892.
Grant, 4-1-1865. From village of Fort St. & Elmwood Ave. Ry.
Grant of July 26, 1880, from trp. of Springwells.
Grant of June 17, 1880, from trp. of Springwells. Extended, March 9, 1895, for 30 years.
Grant of March 31, 1888, from twp. of Springwells.
Detroit, Springwells & Dearborn Ry. Co. Incorporated.
Grant of 6-24-1889 from trp. of Springwells to Albert E. Poppe et al.
Detroit River Rouge & Elmwood Ry. Co. Incorporated. Acquired by Detroit River, Rouge & Dearborn St. Ry. Co.
Acquired by Fort Wayne & Elmwood Ry. Co.
Highland Park Railway. Incorporated May 12, 1886. Acquired by Detroit Suburban Ry. Co., Feb. 1, 1893.
E. E. Snow, et al.—Grant, 10-17-1885, from twp. of Greenfield.
Acquired by Highland Park Railway.
Grant, 7-13-1886. Grant, 4-18-1891, from twp. of Hamtramck. Detroit Electric Ry. Co. Incorporated May 19, 1896. Acquired by Detroit Suburban Ry. Co., Nov. 1, 1892.
Geo. Dorr, et al.—Grant, 4-17-1886, 25 years. Acquired by Det. Ave. Railway. Incorporated.
Geo. Dorr, et al. Acquired by Detroit Electric Ry.
Grant, 5-10-1886. From twp. of Springwells—30 years.
Detroit Suburban Ry. Co. Incorporated Nov. 1, 1892. Acquired by Detroit United Railway, Dec. 31, 1900.
Jefferson Ave. Railway. Acquired by Detroit Suburban Railway Co.
Geo. Hendrie, et al.—Grant, 4-14-1891, from twp. of Hamtramck—Perpetual. Acquired by Jefferson Ave. Railway.
Grand Trunk Junction Ry. Acquired by Detroit City Ry. Co., Aug. 5, 1889.
Grand Trunk Junction Ry. Acquired by Fred. Carlisle and Assn. by Congress & Baker St. Ry.
Original Grant, 8-12-1873, to Moses W. Field, et al. Incorporated May 1, 1869. Acquired by Detroit City Ry. Co.
Grant, 4-11-1873, from trp. of Springwells.
From trp. of Hamtramck. Perpetual.
Grant, 6-13-1873. Incorporated, and subjected to Detroit City Ry. Co.—Ordinance on, 11-14-1879.
Cass Ave. Ry. Co. Incorporated 5-31-1873. Acquired by Cass Ave. Ry. Co.
Grant, 6-13-1873. From village of Detroit, subjected to Detroit City Ry. Co. Ordinance on, 11-14-1879.
Henry Plass, et al.—Grant, 5-7-1891, from trp. of Hamtramck—Perpetual. Acquired by Graiot Ave. Ry. Co., Dec. 10, 1891.
Graiot Ave. Railway Co. Incorporated Dec. 9, 1891. Acquired by Detroit Suburban Ry. Co., Nov. 1, 1892.
Detroit Electric Railway. Incorporated May 19, 1896. Acquired by Detroit United Railway, Dec. 31, 1900.
Detroit Electric Railway. Incorporated Dec. 10, 1894. Acquired by Detroit Electric Railway, July 20, 1896.
H. A. Everett, et al.—Grant, 12-4-1891—30 years. Acquired by Detroit Railway, Dec., 1894. Grant, 3-9-1895, from twp. of Springwells.
DETROIT UNITED RAILWAY Incorporated Dec. 31, 1900.

Compiled from the best available information by Robt. B. Kitzenmiller.

The term route is applied to the special portion of the various lines over which certain cars operate in making their round trip.

The statement on page 41 gives in tabular form the 20 lines, together with the length of each main route, the number of routes included in each line, the car trips per annum, the passengers per mile of single track, and the total number of passengers carried, for the years 1913 and 1914, from which the relative importance of the various lines is readily noted.

By referring to MAP 1 it will be seen that 14 out of the 20 above mentioned lines pass through the heart of the city. Of these, the heaviest and most important are the Woodward, Michigan, Jefferson, Fourteenth, Fort and Baker lines. By reference to MAP 5 the location and detailed routing near the heart of the city can more readily be followed. So far as the present traffic conditions are concerned, all the street car lines may be grouped into four classes:

1. The outlying, cross-town and connecting lines which do not enter the center of the city;

2. The lines which run substantially north and south through the congested district;

3. The lines which run generally east and west across the congested district;

4. The interurban lines which enter the congested district from all directions.

Outlying and Crosstown Lines—Crosstown, Grand Belt (Junction Avenue), South Chene, Springwells, Third Street Depot, Victor

These lines at present perform the general function of a transfer between the various radial lines which they intersect, or give some special service in carrying traffic from outlying parts of the city to groups of factories, Belle Isle, or other localities. This group of lines carried 33,620,467 passengers in 1914.

Of these lines the most important is the Cross-town, which carried 28,469,966 passengers in 1914, of which 15,261,453 were non-revenue, this line being essentially a transfer line across the city and also operating north and south through the east portion of the city to the approach to Belle Isle bridge.

The other lines in this group are of minor importance so far as bulk of traffic is concerned.

The Victor line supplies principally a rush hour service to accommodate the factory workers in the northeast part of the city.

The Grand Belt is a new line north and south on Junction Avenue, at present operating from Fort Street to Warren Avenue, giving a transfer service north and south through the extreme southwestern part of the city. The line has been in service only a short time but the initial traffic has been so heavy as to indicate that it will develop into a useful connecting link between the streets mentioned.

Lines Running North and South Through Congested District—Brush, Fourteenth, Hamilton, Jefferson, Trumbull, Warren, Woodward

The term "congested district" refers to the general territory from the river to Grand Circus, and from Second to Brush Street.

This group of lines carried a total of 145,836,222 passengers (including transfers) in 1914. This does not mean that this number of passengers were

Present Detroit United Railway Lines

Exclusive of Interurbans

Name of Line	Length of Main Route in Miles Round Trip	Number of Car Routes	Total Car Trips per Annum	Total Passengers Carried, 1913		Total Passengers Carried, 1914	
				Per Mile of Single Track	Total	Per Mile of Single Track	Total
Baker	15.74	9	128,903	1,257,900	19,800,800	1,482,200	23,330,757
Brush	7.02	3	82,889	841,200	6,410,136	889,500	6,778,476
Crosstown	19.43	10	175,405	1,267,100	24,621,374	1,465,200	28,469,966
Fort	23.67	16	190,282	1,064,200	24,847,607	1,074,000	25,316,205
Fourteenth	27.33	15	358,199	1,130,800	30,905,907	1,159,800	31,697,638
Grand Belt	5.4	1					(2 mo)518,813
Hamilton	15.76	8	133,771	763,200	12,028,286	835,900	13,174,280
Harper	13.62	10	103,037	583,000	7,911,159	655,400	8,927,290
Jefferson, including Grosse Pointe	22.23	10	193,913	1,549,900	34,454,521	1,716,800	38,158,023
Michigan	26.76	17	237,247	1,597,100	42,740,114	1,737,900	46,484,661
Myrtle	11.69	8	73,678	583,900	6,825,855	607,100	7,097,619
New Michigan Central Depot	3.87	2	993		(1 mo)36,457	580,800	2,248,584
Sherman	19.67	25	172,853	1,023,600	20,136,117	870,000	17,114,209
Springwells	7.75	1	32,257	149,000	1,155,163	180,300	1,397,134
South Chene	3.13	4	46,955	528,400	1,654,155	513,900	1,608,692
Third Street Depot	2.42	2	40,261	190,900	462,082	170,800	413,401
Trumbull	6.90	12	91,531	883,400	6,095,764	964,400	6,654,871
Victor	3.53	1	27,648	243,200	858,783	343,400	1,212,461
Warren	10.55	5	31,688	197,200	2,080,995	181,500	1,915,640
Woodward	15.46	8	351,708	2,980,200	46,074,911	3,069,600	47,457,294
Total and Average	199.33 (1913)* 200.88 (1914)	167	2,473,198	1,450,510	289,130,216	1,498,502	310,010,104

* These figures are the miles of single track in operation at the end of the years indicated.

carried across the congested district, but it shows the importance of the lines in general terms.

Practically all of these lines at some part of their passage through the congested district (see MAPS 1 and 5) run on Woodward Avenue or Griswold Street. These lines in nearly all cases carry the north and south traffic not only to the center of the city but down to the river front, reaching the various boat landings and other important points in this part of the city.

Lines Running Generally East and West Across the Congested District—Baker, Fort, Harper, Michigan, Michigan Central Depot, Myrtle, Sherman

These lines can be fairly classified only under the above heading on account of their running generally east and west and crossing the north and south group in the heart of the city. The individual characteristics of the lines are quite distinct, the Michigan line, for instance, running from the extreme northwestern portion of the city southeasterly via Michigan Avenue to the City Hall, and thence via Gratiot to the extreme northeastern limits of the city.

The Fort Street line on the other hand extends from the extreme southwestern portion of the city at the River Rouge almost due east along Fort Street, through Cadillac Square, and thence a portion of its service is carried easterly to the district near the Belle Isle bridge.

The other lines approach from various directions, and either loop downtown or cross to some other district on the opposite side of the city.

These lines carried 130,553,415 passengers (including transfers) in 1914. Here again it must be noted that all of this traffic was not carried across the center of the city, but the figures give the relative importance of this group of lines.

Interurban Lines Entering the Congested District from Various Directions—Pontiac Division; Flint Division; Orchard Lake Division; Wyandotte Division; Detroit, Jackson & Chicago Railway; Detroit, Monroe & Toledo Shore Line Railway; Rapid Railway; Rapid Railway—Shore Line Division

These lines enter the city from nearly every direction, passing over the main thoroughfares and looping on various streets in order to pass the common transfer and waiting station at Griswold and Larned Streets. (See map on a following page.) The service on these lines is by means of heavy interurban cars, and in some cases by two car units. The frequency of service during the rush hour on the different lines varies from 10 minutes to one hour. These lines perform a valuable function in connecting the city with a very widely distributed interurban district, and also run a through service to cities of considerable size.

Equipment

The rolling stock passenger equipment of the Detroit United Railways' city lines consists of the following:

CITY PASSENGER CARS.

Single truck, closed	300	
Single truck, open	187	
Single truck, PAYE	199	686
Double truck, closed	50	
Double truck, open	—	
Double truck, PAYE	572	622
Total		1,308

The rolling stock in general use on the principal lines, such as Woodward, Michigan, Jefferson, Hamilton, Fort and Trumbull, consists of double truck, two motor, pay-as-you-enter cars, seating from 40 to 46 passengers and provided with the usual large platforms for loading purposes. These cars are heated with hot air heaters and the air brake equipment is operated entirely from storage tanks on the cars, which are recharged usually at the end of each round trip. The cars are fitted with cane seats and are provided with folding steps, which are raised when the exit and entrance doors are closed. All cars are built for single end operation. In general, the bodies of these cars are of wooden construction. On various lines of lesser importance and on some lines of considerable importance, such as the Fourteenth, Sherman and Crosstown lines, most of the equipment is of single truck cars of various types of construction and of seating capacities varying from 28 to 50. On other lines the equipment is of a mixed character, some being modern pay-as-you-enter cars and others of the above mentioned older type. In general, about half of the equipment is double truck, modern type, pay-as-you-enter cars in good operating condition; the balance, while generally serviceable, is not adequate to handle the rush hour traffic on some of the lines on which it is still used. Some of the older cars are in bad condition.

The track and roadway are in good condition in the congested district on the principal lines, but on the less important lines and in outlying streets their condition is poor. The present standard construction consists of 91# T rail, on white oak ties embedded in concrete. The special work consists of 114# grooved rail of a modern hard center type. The overhead construction consists of 00 round copper trolley wire.

PRESENT TRAFFIC CONDITIONS IN DETROIT

The general traffic conditions in Detroit, in so far as the periods of travel throughout the day are concerned, are in many respects characteristic of most American cities. From midnight to 5:00 A. M. travel about the city is very light, except for special groups of night shift employees leaving factories about midnight and for whom a separate "tripper" service is provided. Commencing at 5:00 A. M., and in some cases slightly earlier, the movement of workmen on the various lines gradually increases up to about 6:30 A. M. and ends about 7 A. M. This is followed by the usual morning business movement to the retail stores and office district.

In the period between this morning travel and the evening rush hour, traffic is of a mixed nature, varying somewhat with the season of the year and without marked characteristics, except the discharge of the afternoon shift at some of the larger factories, which requires a special "tripper" service from about 3:00 to 4:30 P. M. The evening rush period occurs from 4:30 P. M. until 6:00 P. M. There is a further large movement during the evening when the amusement crowds are handled.

In addition to these usual daily phases, there is a considerable seasonal change in the number of passengers to be handled to and from the boat landings along the river and a still more fluctuating and irregular demand for service to Belle Isle. The traffice to the last mentioned point is considered under a separate heading.

The general traffic conditions at other than the rush hours are not at present difficult to handle satisfactorily with the existing system, except that certain extensions into districts not now served should be added (see MAP 2) and certain increases in service to meet special conditions should be provided. These are included in our recommendations.

Rush Hour Traffic

The rush hour traffic conditions, however, present an entirely different aspect and one which will require radical treatment in order to make them satisfactory to the traveling public.

As previously stated, Detroit is of a semicircular type with radial traffic arteries, the direction of traffic being principally to and from the heart of the city and the river front, and to and from the generally semicircular belt or girdle of factories. The residence portion of the city, which forms the morning starting point and evening terminus of the average passenger's daily trips, lies principally between the center of the city and the girdle of factories, with a residence district rapidly building up beyond these limits. The result of the relation of these parts of the city is the passage of a large proportion of the total rush hour movement to and from and across the center of the city.

The suggestion has been made of possible relief by belt or cross-town lines, to provide routes which will carry people to and from their homes and places of employment without passing through the general center of the city.

It is obvious that a large proportion of those whom such belt lines would be expected to divert from the congested area would be the factory employees engaged in the girdle of factories to which we have referred. As a rule, in other

cities where they have been tried, belt lines have not been successful, except in limited territory and to perform a special service.

Distribution of 45,611 Factory Employees

We made an investigation of the distribution of factory employees, comprising all of the principal types of active industries in the city, by examining the address lists of 11 groups of factories. On MAP 8 the location of each of these 11 factory groups is indicated by large figures surrounded with a circle. The city area is shown divided into 1 mile squares, and from the address lists of the employees in the various establishments the residences of 45,611 employees have been located in the various 1 mile squares. In each square are shaded areas, numbered on the left from 1 to 11, which represent graphically the number of employees living in each square mile and working at the factory group designated by the number at the left hand end of this shaded area. The figures on the right of these areas give the same information numerically.

It will be seen at once that while a considerable proportion of factory workers live within walking distance of their place of employment, the great majority are scattered over practically every section of the city.

This general distribution is due in part to the fact that different members of one family have diverse occupations and places of employment, no one home location being convenient to all. In Detroit there is also a constant shifting from one factory to another as the forces of the plants are frequently increased or decreased.

The following table shows the estimated number of the 45,611 factory workers who walk, the number who ride without passing through the central district, and the number riding or transferring through the central congested district of the city:

Classified Movement of 45,611 Factory Workers

No. of Factory Group	Number of Workers Who Reach Their Place of Employment by:				Remark
	Walking a maximum distance of one mile	Car lines through congested district	Car lines outside congested district	Total	
1	2,542	3,800	8,899	15,241	Figured on basis of data given on MAP 8
2	2,129	1,648	3,099	6,876	
3	1,652	1,058	2,358	5,068	
4	660	2,595	1,744	4,999	
5	1,902	501	2,064	4,467	
6	1,113	905	859	2,877	
7	850	127	768	1,745	
8	1,259	195	282	1,736	
9	150	500	444	1,094	
10	247	555	.....	802	
11	370	170	166	706	
Total...	12,874	12,054	20,683	45,611	
Percent.	28.2	26.4	45.4	100	

Classified Movements of Total Factory Workers in Detroit in 1913, Based on Ratios Shown by Above Table

City of Detroit 1913....	35,250	33,000	57,750	125,000*

* Estimated total number of persons engaged in manufacturing industries exclusive of hand industries.

The figure of 125,000 factory workers for the city of Detroit for the year 1913 is estimated from the State Labor Commissioner's report for 1909.

Assuming that the various factories selected in making up the above table are fairly representative of the whole city and dividing the above 125,000 workers into the same three classes, the indications are that approximately 33,000 factory workers pass through the heart of the city in the morning and evening.

A further check upon this transfer of factory workers through the heart of the city, to indicate whether or not they are concentrated upon particular lines or have a very general distribution, is shown by the following street corner count, which was made in the early morning hours when the vehicle and pedestrian traffic is practically absent from the streets in and about the City Hall.

Street Corner Count of Transfers in and Near Cadillac Square and City Hall

from 5:30 A. M. to 7:00 A. M.

This count is only a general indication of relative figures as at times the transfer was so heavy it became impossible to trace all the passengers accurately.

To	From		
Woodward North	Fort West	212	
	Fort East	409	
	Baker East	454	
	Michigan East	1,233	
	Sherman East	106	
	Sherman West	167	
	Harper West	60	
	Fourteenth West	23	
	Fourteenth East	1	
	West Warren	1	
			2,666
Jefferson South	Myrtle South	7	
	Harper West	16	
	Woodward South	1	
	Sherman East	51	
	Sherman West	57	
	Fourteenth West	67	
	Fourteenth East	14	
	Fort East	570	
			783
Jefferson North	Harper West	19	
	Sherman West	21	
	Fourteenth West	36	
			76

TO	FROM		
Jefferson West	Fort West	127	
	Fort East	14	
			141
Fort East	Trumbull South	1	
	Jefferson South	16	
			17
Fort West	Myrtle South	38	
	Hamilton South	10	
	Jefferson South	191	
	Trumbull North	9	
			248
Fourteenth East	Jefferson South	18	
	Sherman East	3	
			21
Fourteenth West	Sherman East	11	
	Sherman West	44	
	Jefferson North	4	
	Harper West	13	
			72
Sherman West	Fourteenth West	58	
	Fourteenth East	37	
	Harper West	11	
	Jefferson West	16	
			122
Sherman East	Fourteenth East		73
Sherman South	Jefferson South		50
Myrtle South	Fourteenth West	24	
	Fourteenth East	3	
	Sherman East	21	
	Jefferson South	2	
			50
Myrtle North	Harper West	3	
	Fourteenth West	2	
	Jefferson North	2	
	Sherman West	4	
			11
Myrtle East	Fort West		14
Myrtle West	Fort East		79
Trumbull North	Fort East		15
Michigan Depot	Jefferson South		8
			4,446

This table shows that practically every line crossing the heart of the city contributed to the loading of every other line, and that the heaviest transfer to Woodward north was from Michigan, Baker and Fort east; the heaviest transfer to Jefferson south from Fort east, and that Woodward north received over half of the total transfers.

Starting from any one group of factories and following the traffic lines of the city across MAP 8, it will be seen that no new belt or cross-town line would serve a majority of the people in this factory group, but that on the contrary the easiest and quickest route in most cases from their homes to their place of employment is directly through the center of Detroit. It is also true that during the rush hour more frequent service is given on these heavy lines than could possibly be maintained on any special belt system.

Conflicting Crossings Causing Traffic Congestion

For purposes of analysis the traffic in the congested district may be divided into three classes:

1. The lines running north and south, or those on Woodward, Griswold and parallel streets;
2. Those running east and west, or cross-town lines, crossing and intersecting the former at right-angles;
3. The interurban lines which run in all directions from the center of the city.

In addition to the above three classes there are irregular "tripper" routes which loop in the center of the city and cross back and forth through the general congestion.

A study of DIAGRAM 9, which shows the scheduled cars per hour on various streets between 5:00 and 6:00 P. M., develops very plainly the reasons for a large part of the traffic congestion. The schedules and passenger traffic figures for the year 1913 have been used in this and other diagrams as representing a more normal year than 1914. The 1914 figures were not obtainable until just upon going to press and they have been inserted only where valuable for comparison.

It will be noted on DIAGRAM 9 that the lines included in class 1 above show a car frequency per hour of 167 cars north bound and 167 south bound on Woodward Avenue at State; 205 south bound and 189 north bound at Michigan and Fort, and 181 cars in each direction at Congress, Larned and Jefferson. This very heavy traffic is opposed by the conflicting traffic on the above named cross streets amounting to 116 west bound and 45 east bound cars per hour on State Street, more than 100 cars per hour in each direction on Michigan and Monroe, 52 west bound and 56 east bound cars per hour on Fort, and 85 west bound and 42 east bound cars per hour on Jefferson.

A similar severe crossing congestion is evident on Griswold, amounting to 89 south bound and 126 north bound cars per hour at State and Michigan, and 95 south bound and 132 north bound cars per hour at Fort. These are opposed by 55 west bound and 105 east bound cars per hour on State, 132 west bound and 124 east bound cars per hour on Michigan, and 58 west bound and 62 east bound cars per hour on Fort. Interference on Griswold is further aggravated by a large number of cars turning in and out of various lines, which constitutes at these

points a worse interruption to traffic than a right-angle crossing. The congestion at the corner of Grand River and Griswold is particularly bad, due to the large number of cars passing, and also to the non-clearance curve into Grand River from Griswold. This curve should be rebuilt for proper clearance.

The interurban lines which enter the congested district from all directions over the main radial thoroughfares constitute a special and very annoying interference out of all proportion to the frequency of car operation. This is due in part to the large size of the rolling stock used, but more particularly to the fact that they turn in and turn out of the crowded avenues in an awkward manner, and that the necessity for loading practically all their passengers at one point in front of the interurban waiting-room seriously interferes with the operation of the regular cars.

At the present time the cars begin blocking first on Michigan east bound, backing up usually for several blocks, and in case of large depot or baseball crowds the condition is very much worse. This is followed by congestion and lining up of south bound cars on Woodward between Grand Circus and the river, followed a little later by a similar blocking of the north bound Woodward cars. The same condition exists on both the north and south bound tracks on Griswold, and is an almost daily occurrence from Jefferson to Grand River. On both Fort and Jefferson there is also a general choking of car movements at some period during the evening rush hour. On State at Woodward and in Pingree Square there are frequent blockades of less degree. Other blockades and delays occur at different points from various causes, but all of the above mentioned interferences result in a general slowing up of the car movement to such an extent as to greatly reduce the capacity of the system and to seriously inconvenience the public.

Stopwatch observations of the time of all cars in the evening rush period on Woodward from the south side of Fort to the north side of State, taken on various days, show that every car is delayed fully one minute by the crossing interferences, or expressed in another way, the running time is increased 50% over what it should be were there no such interferences. A similar and even worse condition was disclosed by like observations on Michigan and Gratiot between Wayne and Library, where the excess time required east bound was nearly four minutes, or over 100% additional running time, while the west bound cars showed a similar condition but were not as much delayed. The various crossing delays are cumulative and the observations throughout the congested district show that the time so lost is a very serious matter. The following table gives the numerical results of these time observations:

Table of Time Delays Resulting from Crossing Interferences in Congested District During Evening Rush Period

Woodward Avenue Cars Northbound

Unobstructed	*A*	*Obstructed*	*B*
Average unobstructed running time from south side of Fort St. to south side of State St.	50.8″	Average running time from south side of Fort St. to north side of State St. and loading time at Fort St. and State St. of all cars in evening rush hour period	2′ 59″
Average loading time at Fort St.	28.8″		
Average loading time at State St. and time of unobstructed crossing of State St.	40.4″		
Average Total time	2′ 0″		2′ 59″
Average time of delay	59″		

Michigan and Baker Cars Eastbound

Unobstructed	*A*	*Obstructed*	*B*
Average running time from Wayne to Farmer St.	147″	Average running time from Wayne to Farmer and loading time at Shelby, Griswold, Woodward and Monroe Sts. of all cars in evening rush hour period	7′ 42″
Average loading time at Griswold, Shelby, Woodward and Monroe Sts.	81″		
Average Total time	3′ 48″		7′ 42″
Average time of delay	3′ 54″		

Michigan and Baker Cars Westbound

Unobstructed	*A*	*Obstructed*	*B*
Average unobstructed running time from Farmer to Washington St.	120″	Average running time from Farmer to Washington and loading time at Woodward, Griswold, Shelby and Washington Streets in evening rush hour period	5′ 8″
Average loading time at Woodward, Griswold, Shelby and Washington Streets	72″		
Average Total time	3′ 12″		5′ 8″
Average time of delay	1′ 56″		

Explanation

Column "A" is the average of a large number of stop watch observations of cars passing through the congested district without vehicle or car crossing interference with an average passenger loading at each stop approximately equal to the average passenger loading at each stop of cars observed in column "B."

Column "B" is the average of stop watch observations of the running and loading time of all cars through the congested district.

Future Traffic Growth

The car frequencies per hour shown on DIAGRAM 9 represent the traffic conditions of the 1913 schedule. It is desirable, however, to approximate the future volume of traffic in Detroit in attempting to lay out a suitable plan of relief.

The total street car revenue passengers per capita in Detroit and its suburbs have increased from 198 per annum in 1904 to 340 per annum in 1913, an increase of 71.8%. This increase has been quite regular with the exception of a slight setback in 1908, and in 1914 the revenue rides per capita dropped to 333, the decrease being probably due to business conditions. (See diagram following page.)

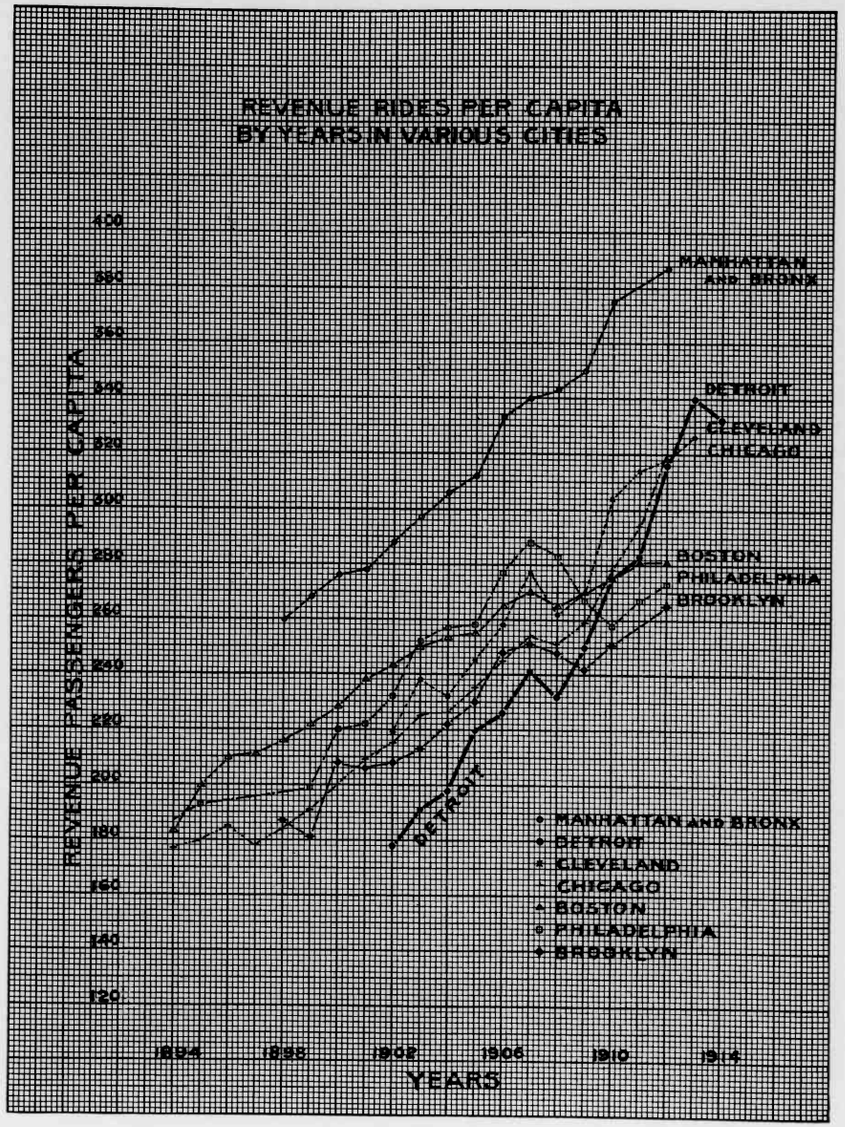
The history of other Amercian cities shows that on reaching a population of from 700,000 to 800,000, the rides per capita do not increase at the same rate as formerly. It is, however, safe to predict that even if the revenue rides per capita do not increase there will be a growth in the number of passengers transported by the street car lines, due to the continued growth of the city of Detroit, and this must be met with larger facilities.

The present concentration in the limited area of the business district is, we believe, a firmly fixed characteristic of the city, and this district will continue to be the terminus or the transfer and passing point of a large proportion of the additional passengers who will have to be handled.

There is notable building activity northward along Woodward, consisting of retail stores and office buildings, and around Grand Circus, consisting of large modern hotels and office buildings. The further progress northward of this development is probable, and a similar growth east and west of Woodward on the adjacent streets between Grand Circus and Fort is already noticeable. As the city grows this business area will expand in various directions and even new centers of business activity may develop at a greater distance from the City Hall. However, when viewed from the standpoint of the whole city area, this expansion will change only in a minor degree the general character of the concentrated congested center of business activity to and from which the great bulk of the daily rush hour traffic must be moved. As the three and four story buildings usual in this district are replaced with modern high buildings, the traffic congestion will inevitably increase.

Another condition which will prove a factor in the growth and concentration of traffic is the building of apartment houses in districts containing detached residences. This will concentrate a large population in a small area and enormously increase the traffic tributary to the adjacent transportation lines. At present this growth is principally noticeable in the district adjacent to Woodward north of Grand Circus and extends more or less all the way to the Grand Boulevard.

Any plan for traffic relief and extensions should be laid out to meet the immediate demands and obvious future necessities, combined if possible with as great flexibility for extensions, additions and changes as future developments may prove necessary.



PROPOSED IMMEDIATE RELIEF WITHOUT LARGE EXPENSE OR TRACK CHANGES

Street Collectors

The introduction of street collectors, as suggested by us early in December, 1914, has demonstrated the practicability of loading more rapidly than heretofore by the simultaneous use of the front and rear doors. A collector in the street receiving fares at the front or exit door of the car, and at the same time assisting passengers as well as acting as a dispatcher, secures the prompt movement of cars upon the blowing of the traffic officer's whistle. By this means a more uniform movement of cars is effected, due to their being loaded and ready to start when the crossing is clear.

In congested traffic movements, the question of a few seconds in a single operation is vital. The time actually occupied by a car in passing over crossing tracks is very small compared to the time required to start and reach the crossing, and when to this time is added a delay of some seconds before the car starts an unnecessary loss of time occurs, during which the crossing is idle. The ideal maximum capacity can be obtained only by moving cars in groups in both directions over the crossing on one route, and following these by an immediate movement of the opposing traffic the instant the rear of the last car has cleared the crossing.

Checks of the loading periods, crossing delays and general car movements on Woodward from Jefferson north to Grand Circus, during the evening rush, indicate that with the front door collectors now stationed at Fort, State and Grand River, the running time has been materially reduced and the congestion and blocking of cars very greatly relieved.

Where the loading is very heavy, it is frequently advantageous to all concerned to shut off passengers crowding on the first few cars and to dispatch these cars rather than delay the whole line to allow a few additional passengers to board. This can be done by the street collector, who must coöperate with the traffic officer at the crossing.

The proper handling of vehicle and pedestrain traffic at these crossings requires that they in like manner move promptly with the traffic signal. The use of special police officers for this purpose at State Street and Woodward Avenue is of great assistance.

Platform Changes in Pay-as-you-enter Cars

A further increase in the loading capacity of the pay-as-you-enter type of cars could be made by converting the rail dividing the entrance from the exit steps of the rear platform of the car into a removable one. By removing this rail at heavy loading points it would be possible to load passengers at three entrances—one in front and two at the rear. This would approximately cut the loading time to one-third.

Skip Stops and Two-car Units

All car lines within a city have periods of greatest demand for service, depending upon the character of service predominating; that is, whether a transfer line or line of originating travel. Obviously, the capacity of any line where the principal traffic during the rush hours is in one direction is limited by the number of cars which can be operated during this interval. To handle traffic properly, a study of two important considerations is necessary—the number and capacity of cars, and the scheduled speed.

Increasing the number of cars to reduce crowding only tends to make conditions worse, unless scheduled speeds and delays are taken into account. The increase of scheduled speed of cars does not necessarily mean an increase in hazard, as the scheduled speed can be increased by reducing the number of stops.

The method of operating two-car units has been successfully tried in a number of cities and has resulted in increased capacity. In Denver, Colorado, two-car units have been in use for some time and have practically solved the peak hour problem.

The double unit feature enables much better time to be made in congested thoroughfares than is possible with a multiplicity of single units, and provides from one-third to one-half greater seating capacity. The running time with double units has been found to be practically the same as with single units.

One of the best examples of the increased capacity which can be obtained by the two-car system and skip stops is on the Superior Avenue line in Cleveland. On this street, where formerly conditions of bad crowding and congestion of cars obtained with the operation of single units, by the introduction of two-car units and the reduction of the number of stops from 15 to 9 per mile, the headway has been changed from one minute to one minute and a half, and congestion of cars on the streets has been eliminated. In 1913, 40% more passengers were carried than in 1910, and the capacity of the line is still well under the limit.

Trailer car or two-car operation has also been used with success in Buffalo, Milwaukee, Pittsburgh, Newark and many other places.

In Detroit, on the principal avenues where recommendations are made for trailer car operation with skip stops, especially on Woodward Avenue, it is estimated that by using a large, light weight trailer car and reducing the number of possible stops per mile from about 12 at present to 8, the scheduled speed will be raised about 10% and the capacity of the line 50%.

The introduction of skip stops and trailer cars will considerably relieve the present congestion and enable additional traffic to be handled for a considerable period.

Temporary Rerouting

A serious element of delay at the present time is due to several car movements which can be partly or wholly eliminated without any additions or alterations in tracks or switches.

The north bound Brush Street cars at present routed from Jefferson via Woodward to Monroe should be rerouted from Jefferson via Bates Street, across Cadillac Square to Farmer, and thence to Monroe. This route is practically as

convenient as at present and the removal of these cars from the crossing at Woodward and Monroe will be a great relief.

The south bound congestion on Woodward Avenue during the height of the rush hour may be relieved by rerouting some of the Hamilton Avenue cars south from Grand River Avenue along Griswold and Shelby to Jefferson, thence to Woodward and north as at present.

The Rapid Railway interurban cars have a very bad routing from Monroe across Woodward and along Michigan to Griswold, where they turn south on Griswold, crossing and opposing all of the lines at that point. Rerouting these cars from Monroe south on Woodward, and making the interurban loop through Congress in the same way as the Pontiac and Flint cars, would simplify and relieve both crossings. Returning, these cars may pass east on Congress, up Bates to Farmer to Monroe, thence as at present.

The Detroit, Jackson & Chicago line east bound may be rerouted down Michigan to Shelby, thence to Jefferson and around the interurban loop past Griswold and Larned, returning as at present.

The Orchard Lake line may be run east bound down Shelby to Jefferson and loop thence back up Griswold as at present.

The above changes can be made at once and will give material relief to the crossing congestion.

PROPOSED COMPLETE REROUTING OF SURFACE CAR LINES

The reroutings, changes and improvements just described will accelerate car movements and give material immediate relief, but the present unsatisfactory conditions can be still further relieved, and in a more permanent way, by carrying out the comprehensive rerouting scheme hereafter described.

The following detail plans of rerouting are intended to permanently relieve the present crossing interferences; to overcome the downtown congestion, and to accelerate car movements throughout Detroit with a minimum change in the established car routes.

Through Lines Instituted in 1895

The principal and characteristic cross-town routes, such as the Michigan, Gratiot, Baker and Jefferson-Grand River, were made up, it is understood, by combining in 1895 seperate lines on either side of the city. The condition at that time apparently required such an arrangement to relieve the existing congestion. The usefulness of this through routing system is limited by the operating capacity of the crossings. The limit of the capacity of many of these crossings has now been reached and a solution of the problem of present congestion requires that the through routing of cross-town lines be reduced to a minimum so as to decrease crossing interferences.

Traffic Counts

Commencing about September 1, 1914, and continuing until the latter part of December, we had a corps of observers who rode on all the city car lines, counted the passengers and observed other conditions. This work was divided into two classes:

1. The continuous riding of lines from one terminus to another, recording the number of passengers loading and unloading at every street corner; the time from point to point; the number of passengers on the cars at various points; transfer conditions; and a few other special items peculiar to individual lines.
2. Additional trips on all lines through the congested district extending from the river to Grand Circus, and from Second to Randoph.

The records of these observations are divided into four periods—the first from 5:00 A.M. to 9:00 A.M.; the second from 9:00 A.M. to 4:00 P.M.; the third from 4:00 P.M. to 6:00 P.M., and the fourth from 6:00 P.M. until midnight.

The object of the first class of trips was to determine the source, destination and general characteristics of the traffic movement on each line. The second class of observations, confined to the congested district, were made with the view of determining by a larger number of observations all the details of the loading and unloading conditions and the proportion of through traffic from one side of the congested area to the other.

The details of these observations are contained in tabulated form in Appendices B and C, and are given in diagrammatic form in the following chapter.

Unnecessary Crossing of Woodward Avenue

It is quite obvious that the double crossing of Woodward Avenue by the Fort Street line in order to loop around Cadillac Square (see MAP 5) is, from a standpoint of convenience to passengers, totally unwarranted. If this line were turned in a loop on the west side of Woodward at the City Hall (see MAP 5A) it would require the present loading point of passengers to be transferred only 200 feet from Cadillac Square to a point on the opposite side of Woodward Avenue.

The Michigan-Gratiot, Michigan-Mack, Sherman and Baker cars crossing Woodward Avenue during the rush hours are crowded and give the superficial observer an erroneous impression of the importance of this cross-town traffic. Passengers originating east of Woodward Avenue make a practice of crossing Woodward Avenue, then walking along Michigan Avenue toward the west in order to intercept east bound cars before they have become heavily loaded. This tends to exaggerate the apparent necessity of these cars crossing Woodward Avenue.

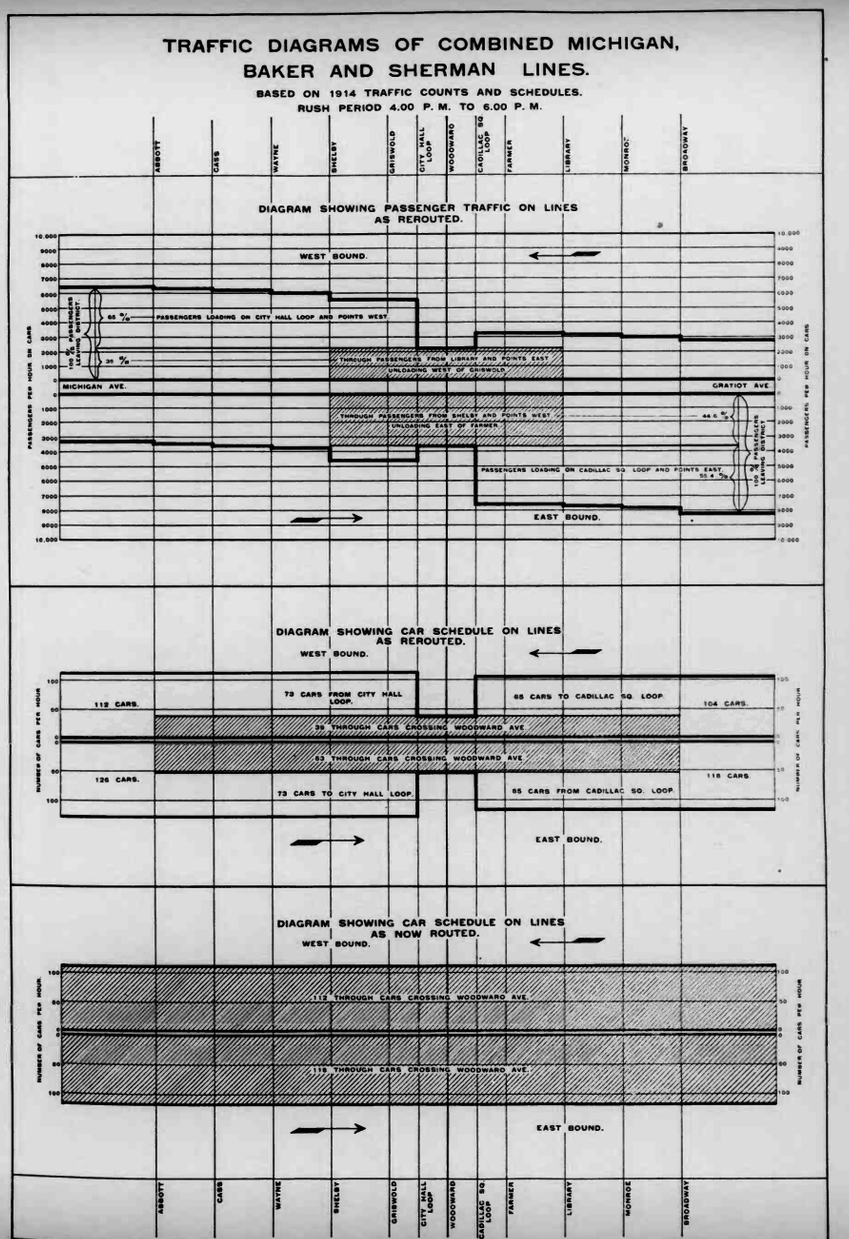
During the evening rush hour the great traffic movement is away from the center of the city. The demand on the foregoing lines, therefore, is for a large number of cars moving westward from Woodward toward the ends of the westward bound lines and east from Woodward toward the ends of the eastward bound lines. The cars needed to supply this heavy demand approach the center of the city in a comparatively empty condition. The present arrangement, therefore, supplies these excess cars approaching their loading points from the wrong side of Woodward Avenue in each case; that is, under the present routing all the heavy car service required to move the evening crowd west from the center is supplied from the east side of Woodward Avenue, and the large number of cars necessary to move the traffic eastward from Woodward Avenue are supplied from the west side, resulting in an absolutely unnecessary crossing of this avenue.

On the next page the traffic diagram, made to show primarily the combined traffic on the Michigan, Baker and Sherman lines during the rush period in the congested district, indicates that many of the cars now crossing Woodward Avenue are quite unnecessary.

The lowest diagram shows graphically the number of cars passing either way during the rush hour at present. The diagram immediately above shows in shaded area the total number of such cars which are believed to be actually necessary to handle the through traffic.

The foregoing diagrams disclose the fact that during the evening rush period 55% to 65% of the passengers entering or leaving this downtown district do not need to ride across Woodward Avenue. During other periods of the day this proportion reaches as high a figure as 70%. An analysis of this traffic shows that the present through traffic on the different lines does not require more than 31% to 47% of the number of cars now operated.

The recommended rerouting hereafter given is based in part on the facts


TRAFFIC DIAGRAMS OF COMBINED MICHIGAN, BAKER AND SHERMAN LINES.
BASED ON 1914 TRAFFIC COUNTS AND SCHEDULES.
RUSH PERIOD 4.00 P. M. TO 6.00 P. M.
ABBOTT
CASS
WAYNE
SHELBY
GRISWOLD
CITY HALL LOOP
WOODWARD
CADILLAC SQ LOOP
FARMER
LIBRARY
MONROE
BROADWAY
DIAGRAM SHOWING PASSENGER TRAFFIC ON LINES AS REROUTED.
WEST BOUND.
65 % PASSENGERS LOADING ON CITY HALL LOOP AND POINTS WEST
35 % THROUGH PASSENGERS FROM LIBRARY AND POINTS EAST UNLOADING WEST OF GRISWOLD
THROUGH PASSENGERS FROM SHELBY AND POINTS WEST UNLOADING EAST OF FARMER
MICHIGAN AVE.
GRATIOT AVE.
44.6 % PASSENGERS LEAVING DISTRICT
PASSENGERS LOADING ON CADILLAC SQ LOOP AND POINTS EAST 55.4 %
EAST BOUND.
PASSENGERS PER HOUR ON CARS
DIAGRAM SHOWING CAR SCHEDULE ON LINES AS REROUTED.
WEST BOUND.
112 CARS.
73 CARS FROM CITY HALL LOOP.
68 CARS TO CADILLAC SQ LOOP.
104 CARS.
39 THROUGH CARS CROSSING WOODWARD AVE.
53 THROUGH CARS CROSSING WOODWARD AVE.
126 CARS.
73 CARS TO CITY HALL LOOP.
65 CARS FROM CADILLAC SQ. LOOP.
118 CARS.
EAST BOUND.
NUMBER OF CARS PER HOUR
DIAGRAM SHOWING CAR SCHEDULE ON LINES AS NOW ROUTED.
WEST BOUND.
112 THROUGH CARS CROSSING WOODWARD AVE.
118 THROUGH CARS CROSSING WOODWARD AVE.
EAST BOUND.

shown on these diagrams, the west bound cars crossing Woodward Avenue being reduced from 112 to 39, and those going east from 118 to 53.

This rerouting has been made on the basis of actual counting of passengers and on further assumptions as to traffic originating in the vicinity of Woodward Avenue and carried by the cross-town lines. It was assumed that west bound traffic originating between Library Street and Woodward Avenue will load on cars west of Woodward, and east bound traffic originating between Shelby Street and Woodward Avenue will load on cars east of Woodward.

To provide facilities for west and east bound traffic and the actual through traffic, the rerouting has arranged for a limited number of cars across Woodward Avenue and the balance of the cars are turned on loops before reaching Woodward Avenue.

The diagrams further indicate that a through traffic exists on these lines, being a proportion of the people entering the districts east bound at Abbott Street and still remaining on the cars when leaving at Randolph and Gratiot, and vice versa. Provision is made to carry this traffic by a diversion of a portion of the car service across Woodward via State Street.

General Plan of Proposed Rerouting

The general plan for the proposed rerouting for the entire city is shown on MAP 2, which also includes in dotted lines proposed additions and extensions to the street car system.

On MAPS 5 and 5A are shown respectively the present routing and the proposed routing of cars through the congested district. The principal routes are designated by different symbols and colors. The same designation is used on both maps for each line.

MAPS 2, 5 and 5A do not show the interurban lines within the city limits.

The proposed complete rerouting of the surface car lines is based upon the idea of elimination of unnecessary conflicting crossings by the introduction of loops on each side of Woodward Avenue and the continued through running of only such a portion of cars from various routes as are warranted by the real through traffic.

On MAP 5A the proposed loops are shown by wide solid lines in black, red and green. These loops are briefly described as follows:

The City Hall loop to and from Michigan Avenue is used to turn the Michigan, Baker, Trumbull, Michigan Central Depot and Sherman cars. A second track around the City Hall provides for the north bound Jefferson, Fourteenth and Warren lines, which return south bound via Shelby.

The Fort Street cars loop south of the City Hall, returning via Woodward, Congress and Wayne to Fort Street.

There are three loops in Cadillac Square, not including the interurban tracks. The first loop is used to turn the Gratiot, Mack and Baker cars from Monroe Avenue eastward to Randolph to Pingree Square. The second loop is used to turn the Fourteenth, Brush, Harper, Fort and Sherman east lines from Monroe eastward to Bates to Library or Lafayette, using the present east bound track on Monroe Avenue for west bound operation. The third loop is used to turn the Woodward and Hamilton cars via Congress and Bates through the west end of Cadillac Square, turning back on Woodward north

bound. The necessary portion of Woodward and Hamilton cars are continued down Woodward to the river, looping via Atwater and Bates, or run to Third and Jefferson, as necessary.

A continuation of the through service north of the City Hall via State Street and south of the City Hall via Congress and Larned Streets, restricted to the absolute needs of the legitimate through business, is provided.

In the east end of Cadillac Square is provided an interurban transfer, consisting of tracks inside of the looped tracks just mentioned, the plan being to divert the interurban cars entirely from the congested area about the City Hall, as will be described in detail later and as shown on MAP 10A.

The proposed loop system occupies less space through the center of Cadillac Square than the existing looped tracks, the removal of which is contemplated. The present clearance from the curb on either side of Cadillac Square to a car passing on the present loop is 27 feet; this clearance will be increased to 41 feet 6 inches at the west end and 38 feet 4 inches at the east end, whatever obstruction the cars may form being confined to the middle of the Square, leaving wide and ample vehicle space, which is much more available than under the present arrangement, and at the same time utilizing the central space for a convenient and safe passenger transfer area.

DIAGRAMS 9 and 9A show the car frequencies in the congested district for the present and proposed routed systems. The width of the black bands show the relative number of cars per hour on the various streets during the evening congestion as taken from the maximum 1913 schedule. The figures show numerically the same facts. The arrows indicate direction of cars.

The diagram of present routing shows more than double the number of crossing interferences than the diagram of the proposed system. The rerouted plan reduces the number of crossing interferences to a minimum.

The Jefferson line throughout its route in both directions under the rerouted plan will have opposing car crossings reduced about 50% from the present condition; the Michigan line 56%, and the Woodward line 75%.

The rerouted plan will give exactly the same car service to and from the center of the city, on the various lines, as at present and include a system of through cars on the principal lines in proportion to the legitimate through traffic. The rerouting plan adheres as far as possible to a continuous one way movement of cars. Any diversion from a given route is turned off in the direction of the traffic. It further secures as equal a distribution of the cars on the various main thoroughfares as possible.

The detailed track spacing, curves and switches, particularly in the Campus Martius (the space in front of the City Hall) and Cadillac Square are arranged to coördinate the vehicular, pedestrian and car movements with the least interference.

On MAP 6 are shown the tracks as they will appear when all the changes contemplated in the rerouting recommendations herein made are completed. The direction of the various car lines is indicated by arrows placed centrally in the tracks. The light dashed lines with arrows indicate the suggested vehicle routes to give the greatest freedom of movement for all classes of traffic. Curb high loading platforms are suggested in Monroe Avenue between Randolph and Woodward for the safe handling of passengers on the west bound inside looped

track. The plan requires increasing the distance between the two existing tracks in Monroe Avenue in order to provide space for these loading platforms. A similar platform for the Fort Street loop is shown near the fountain at the corner of Fort Street and Woodward Avenue. A waiting-room for interurban passengers is indicated in the center and eastern end of Cadillac Square.

TRAFFIC DIAGRAMS, ORIGIN, DESTINATION, AND CAR LOADING

On the following pages are shown diagrams presenting graphically the information obtained by traffic observations and which is presented in tabular form in Appendix C. Diagrams are given for each important line, the smallest outlying lines only being omitted. These diagrams are of the same general form and vary only in unimportant details. The information thus shown is of two classes:

A. The distribution of the loading and unloading by streets and districts.
B. The observed passengers on cars for various districts and periods of time.

The information in Class "A" is plotted for each street in each direction and shows the total number of passengers per annum (1913) boarding and alighting. These ordinates are plotted from the figures given in the tables of Appendix C in the two extreme righthand columns. The abscissae show miles of line, and the actual distances from point to point may be obtained by use of the "Scale in miles."

The information in Class "B" is plotted on the same horizontal scale as Class "A", the vertical scale showing the number of passengers on board the cars at any point. These figures are derived from the same observations as the tables shown in Appendix C.

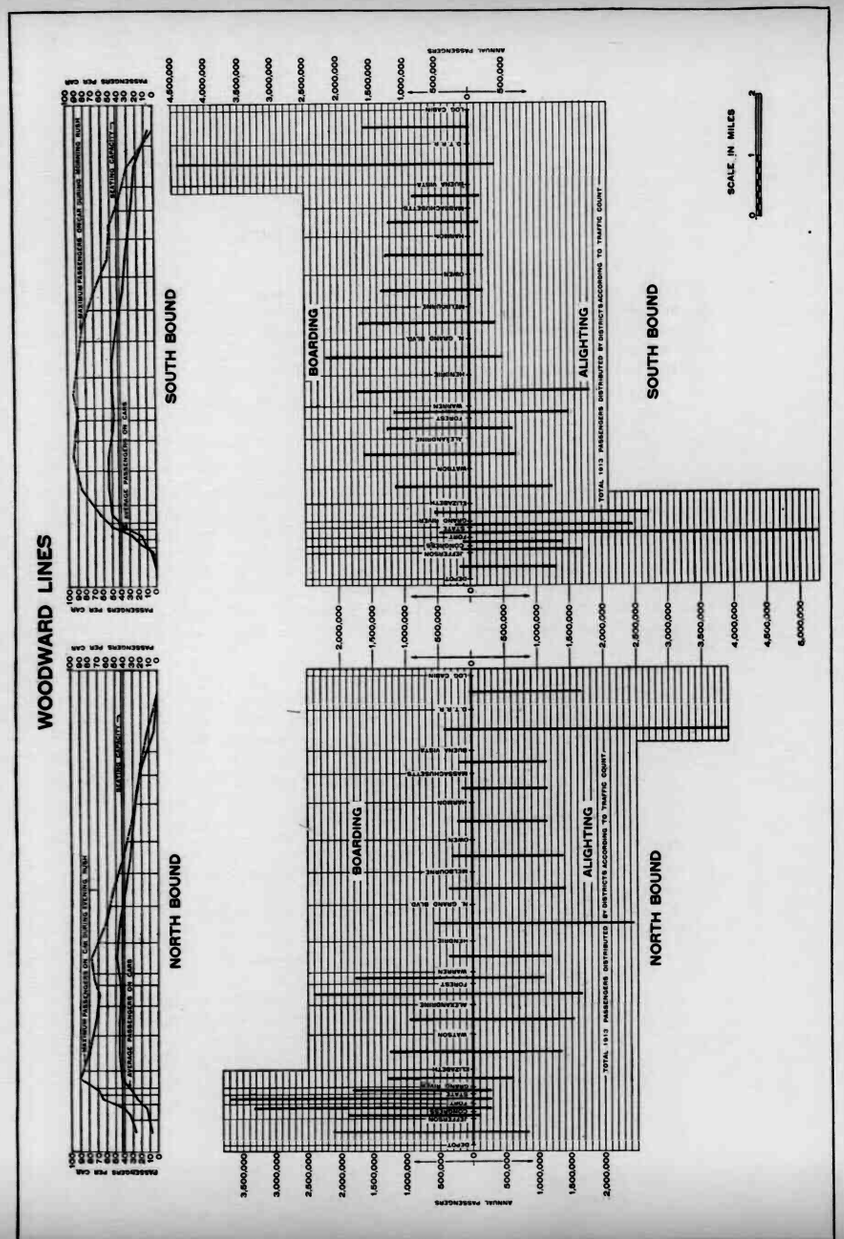
In general, the curves of car loading show:

1. The average passengers on cars during the rush period, which is in the morning or evening, depending upon the character of the line.
2. The average passengers on cars in the maximum hour during the rush period in the congested district.
3. The maximum passengers on cars in the rush period in the congested district.
4. The average seating capacity for the cars in use.

These diagrams are based upon observations extending over the period of this traffic survey (September 1st to December 15, 1914) and represent fair average conditions.

A study of these diagrams develops certain general facts, which may be briefly summarized as follows:

1. The predominant loading and unloading in the delivery district near the City Hall.
2. The heavy transfer from all intersecting lines to the cross-town lines.
3. The marked transfer from all lines to all other lines at each transfer point.
4. The heavy car loading on both sides of Woodward on lines crossing the delivery district.



5. The change of load on these lines in the congested district.
6. The heavy loading of cars on certain outlying lines when sudden traffic demands exceed the schedule from the delivery district.
7. The number of passengers standing for long distances over considerable periods of time.
8. The very crowded condition of cars on many lines in the congested district during the rush period.

Woodward Lines

The Woodward lines north bound show about 56% of the passengers loading between the depot and the river and Grand Circus, and a very slight unloading in this district except at Jefferson Avenue, which is a transfer point to the important Jefferson line. Between Grand Circus and the cross-town lines the loading and unloading is fairly equal and of a very considerable volume. The heavy transfer at Forest and Warren is very noticeable. Another important unloading district is between Hendrie and the Boulevard, where the unloading consists largely of factory workers employed in the district located along the Belt Line Railroad. The unloading between this point and Highland Park is heavy and comparatively even for the various districts, while the loading in the same section is comparatively small. The largest unloading point is at the Ford plant in Highland Park, where 17.2% of the total north bound traffic alights. A very considerable unloading takes place between the Detroit Terminal Railroad and Log Cabin.

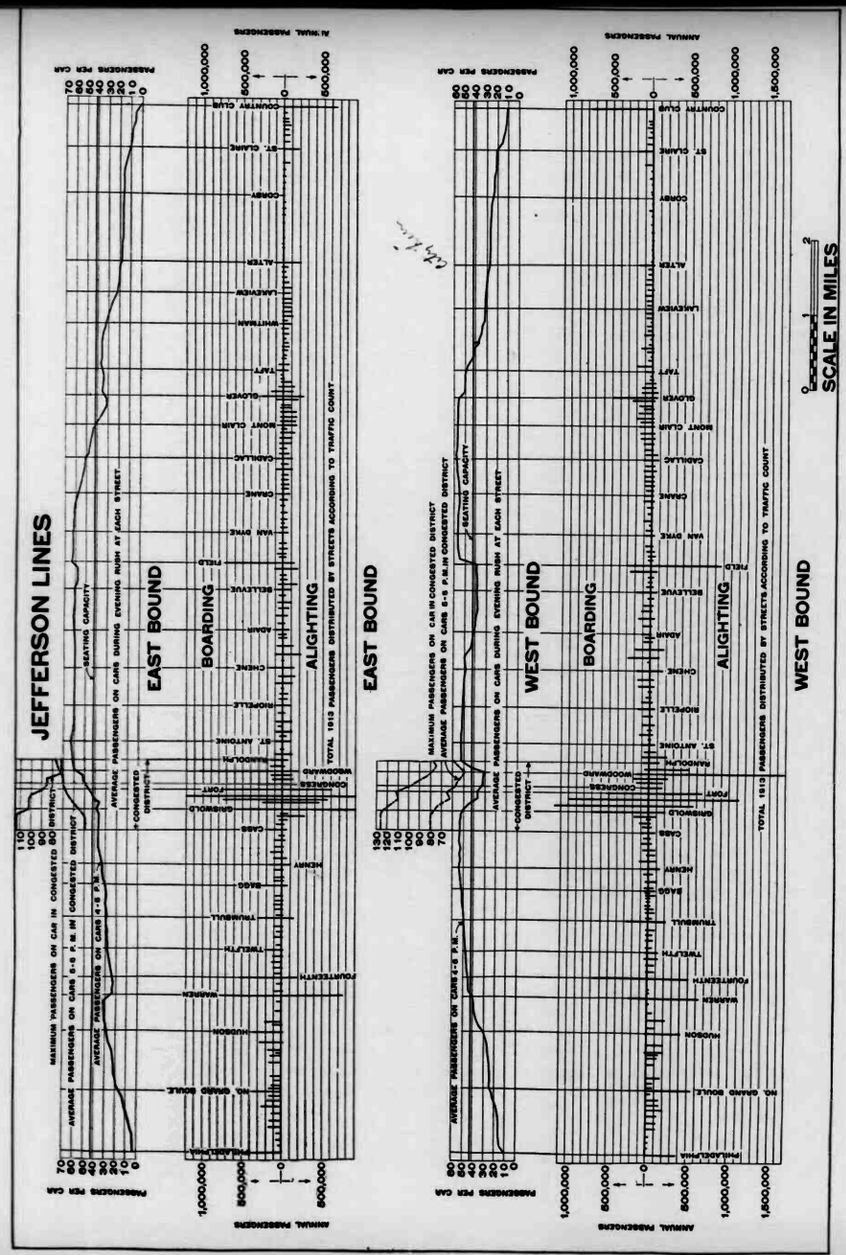
The south bound diagram shows similar characteristics to the north bound, except that the passengers loading and unloading at different points are generally reversed. A striking difference, however, is the much greater unloading south bound at Michigan Avenue than the corresponding loading north bound at this point, indicating that the destination of the south bound passengers is quite definite and that north bound the passengers board from a more widely distributed area.

Marked characteristics of this line are the very large loading and unloading in the congested district; the comparatively even loading and unloading between that point and Highland Park, and the very heavy loading and unloading at the Ford plant in Highland Park.

The loading of the cars as indicated by the car loading diagrams shows that on an average throughout the day the cars were loaded slightly beyond their seating capacity and that this condition extends north bound from Adams to the Boulevard, a distance of 3 miles, and south bound from Melbourne to Grand River, a distance of 3½ miles. The curves of maximum loading do not show a condition of excessive crowding but show large numbers of passengers standing for 4 miles north bound and 5½ miles south bound. The general loading conditions, as observed, show heavy loading at all hours of the day, passengers standing more than on any other line in non-rush periods.

Jefferson Lines

The Jefferson lines show marked points of heavy loading and unloading, particularly in the congested district, the origin and destination of the rest of the passengers being fairly evenly distributed over the length of the line. The heavy



points are the Fourteenth and Warren transfer and Field transfer. The same condition exists for the west bound loading and unloading.

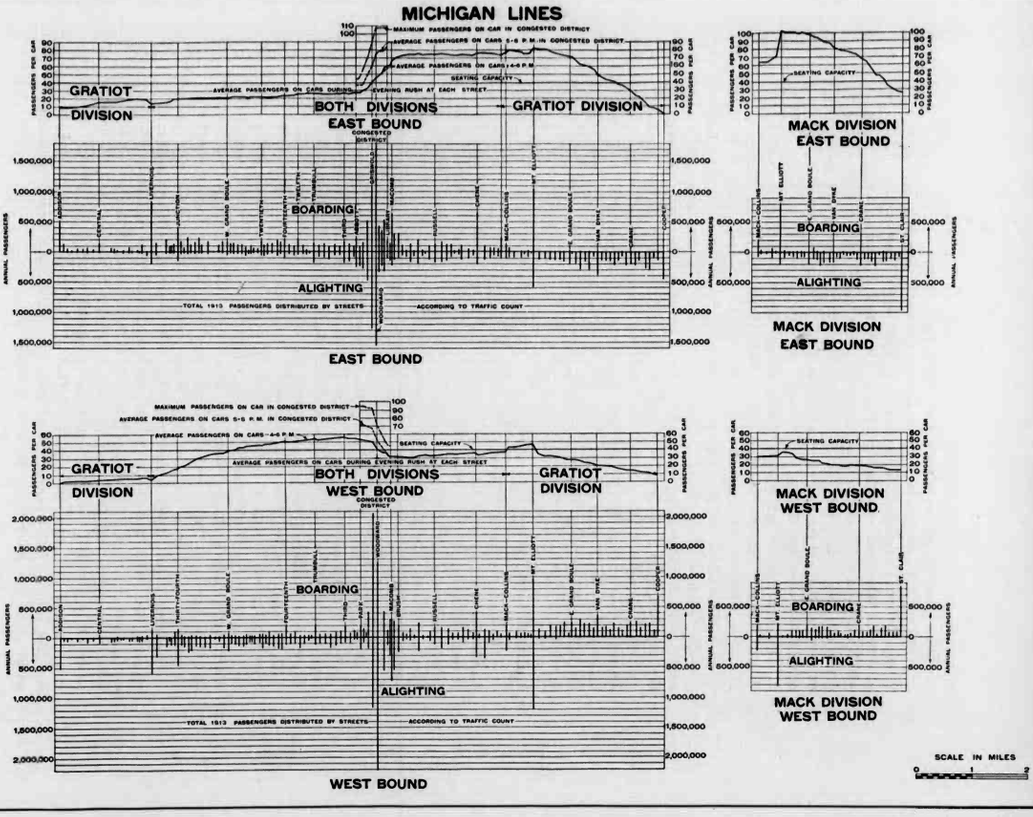
The curve of average passengers on cars in the evening rush period, east bound, shows a moderate standing load from Montclair to Woodward, a distance of 5 miles, where the unloading reduced the load to less than seating capacity, which condition obtained between Woodward and Philadelphia. The maximum car in the congested district shows very severe loading. The heaviest load was on the car as it left the congested district at Cass Avenue, beyond which point observations were not taken.

The curve of average loading during the evening rush period, west bound, shows a standing load of moderate amount from Warren to Fort, a distance of 2½ miles, when the cars emptied to a considerable extent, again filling at Randolph Street and leaving the congested district with a moderate standing load from Randolph to Adair, and again from Field to Conners, a total distance of 4½ miles. The maximum passengers on car were observed at Cass Avenue entering the congested district. This car was very heavily loaded at this point but changed its load in the congested district and had a considerable standing load when leaving the district at Randolph. A particularly noticeable feature on this line is the heavy loading west bound between Field and Conners, the cars on an average in the rush period showing a heavier load in this district than on any other part of the line.

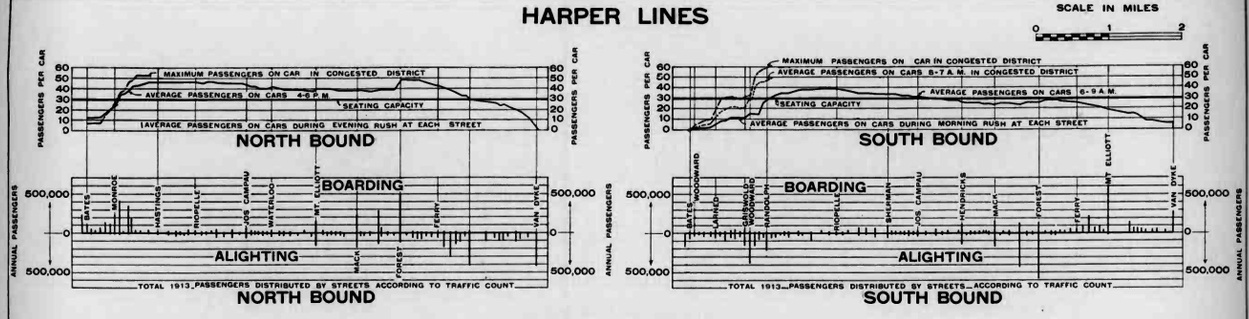
Michigan Lines

The Michigan Lines, both east bound and west bound, show the same heavy boarding and alighting in the congested district and at the important transfer points, such as Chene, Mt. Elliott and Livernois. At other points the loading and unloading was comparatively even for different streets. The curve of car loading for the east bound cars shows that the average passengers during the evening rush period constituted a heavy standing load from Macomb, where the cars leave the congested district, to beyond Van Dyke, a distance of 4 miles, and on the Mack division a very heavy standing load from Mack to Collins to beyond Crane, a distance on this branch of 2 miles. This heavy loading on the Mack Division occurred at Mt. Elliott and is due to the heavy transfer at that point. The curve of average passengers on cars in the congested district from 5:00 to 6:00 P.M. follows the same characteristic as the average for the rush period, being considerably greater in amount. The loading of maximum passengers on a car in the congested district also follows the same general form of curve, showing a very heavy standing load at Macomb when leaving the congested district. It should be noted that the loading at Mt. Elliott on the Mack Division was almost as great as at Macomb. On the curve of the west bound car loading, a less crowded condition is observed, the average for the rush period showing a moderate standing load from Park to West Grand Boulevard, a distance of 2 miles. The average passengers on cars from 5:00 to 6:00 P.M. in the congested district follows the same general form and indicates a heavier loading condition. The curve of maximum passengers on car in congested district also follows the same general form and indicates a still heavier loading, none of the loading, however, being as heavy as on the east bound cars. The heavy loading condition on the Mack Division is absent on the west bound cars.

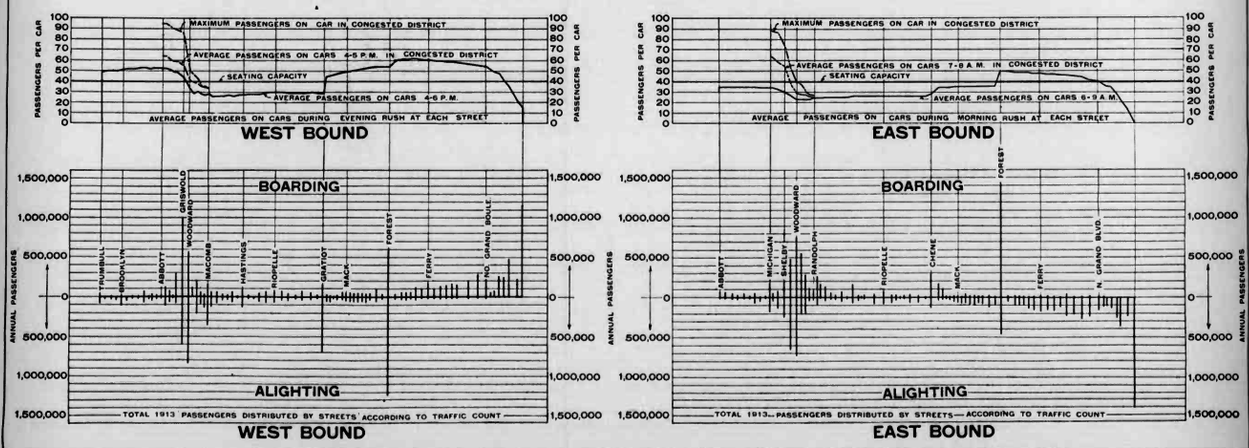
MICHIGAN LINES



HARPER LINES



BAKER LINES



Baker Lines

These lines show the general characteristics of heavy loading and unloading in the congested district and at the important transfer points—Gratiot, Forest, and the north end of the line where several large factories are located. The curves of car loading for the evening rush period show a heavy standing load on the west bound cars from North Grand Boulevard to Gratiot, a distance of 2½ miles. From this point the cars are loaded at less than seating capacity until the congested district is reached, where they again take on a moderate standing load. The curve of average passengers on cars from 4:00 to 5:00 P.M. in the congested district follows the same general form but shows a heavier loading. The curve of maximum passengers on car in congested district also follows the general form but shows a very much heavier loading, the maximum being at Abbott Street.

The curve of car loading east bound shows a load of less than seating capacity through the congested district and until Forest is reached, where a moderate standing load is taken and carried from Forest to North Grand Boulevard, a distance of 1½ miles. The rush hour period on this line east bound occurs in the morning, and maximum passengers on car in congested district is observed at Michigan, entering the district. This car unloaded the greater proportion of its load before leaving the district at Randolph Street.

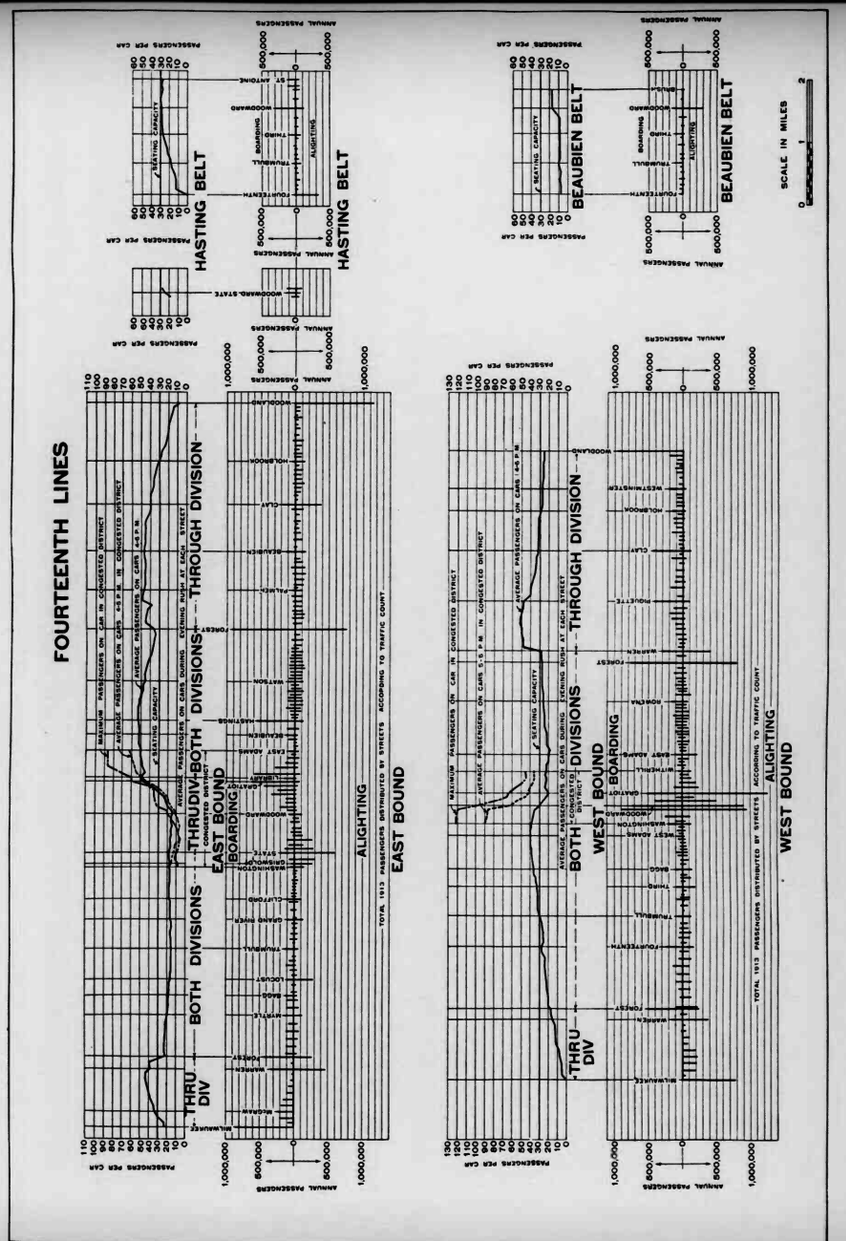
It should be noted in connection with these curves that the observations were not carried west of Trumbull and Abbott Streets. This was due to the fact that construction work interfered with the operation of the Baker line over its regular route.

Harper Lines

The characteristics as shown by the loading and unloading of this line show some peculiarities. South bound, the loading and unloading is principally at transfer streets, the loading at the other points being very light, and less marked in the congested district than some of the other lines. The curves show a maximum in the morning, the average passengers on cars for this period being slightly over seating capacity for a distance of about 2 miles. The average passengers on cars and the maximum passengers on a single car follow the same general curve form, being a maximum at Randolph Street but do not indicate excessive loading. North bound, the loading and unloading is in general similar. The curves of car loading, however, show a very different condition, the average for the evening period showing a moderate standing load from North Grand Boulevard to Monroe, a distance of 5 miles, while the curve for the maximum passengers on car was somewhat greater and followed the same form. In neither case was the loading excessive.

Fourteenth Lines

These lines in both directions show the same characteristics of heavy loading and unloading in the congested district and at the transfer points, also at both the termini, that at Milwaukee Avenue being due to the factory load and that at Woodward Avenue due to the growing district north of the Boulevard as yet unserved by other surface lines. The curves of car loading east



bound show a considerable standing load from Gratiot to Holbrook, a distance of 5 miles. The curves of average passengers between 4:00 and 5:00 P.M. and the maximum passengers on car both in the congested district show larger amounts, being a maximum at East Adams Avenue, where observations ceased. In view of the low seating capacity of these cars this maximum loading may be regarded as excessive. On the west bound cars the average curve shows that there was very moderate loading, except at a few isolated points, and then for short distances. The maximum, however, is very much greater, both for the cars between 5:00 and 6:00 P.M. and for the extreme maximum car, the passengers numbering 120 on the maximum car at Washington Boulevard, which is a very excessive load, and on the average cars between 5:00 and 9:00 P.M. the passengers numbered 90 at Washington Boulevard, which is also excessive. In these curves the Hastings Belt line has been combined with the east bound Fourteenth, the operation of the belt between St. Antoine and Fourteenth being shown on a separate curve, and the very short belt across State Street is also shown separately. The Beaubien belt is then combined with the west bound Fourteenth Street cars and shown in separate diagrams. Neither of these belt lines were heavily loaded and do not require special comment.

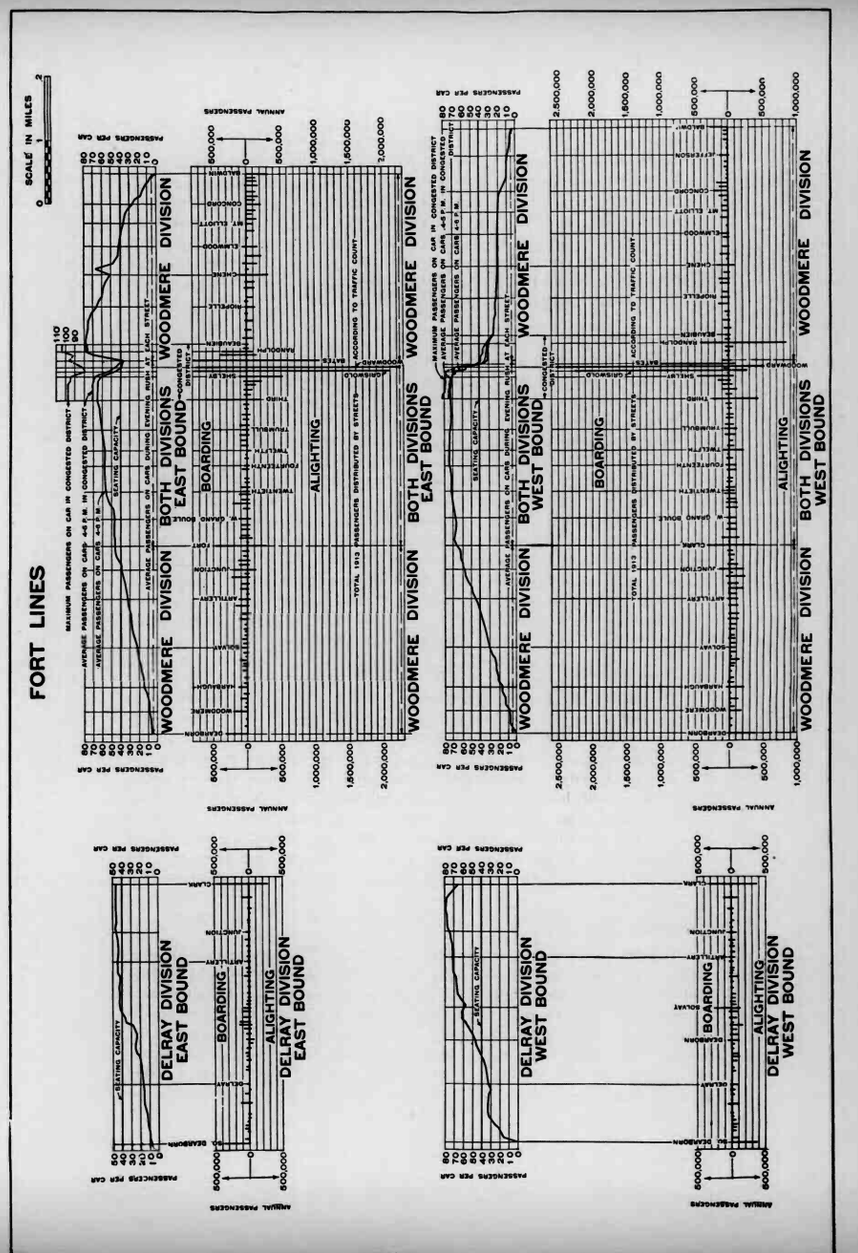
Fort Lines:

The Fort lines, east bound and west bound, show the same characteristics of heavy boarding and alighting in the congested district. At other points the loading and unloading is comparatively even. The curve of average car loading east bound shows during the evening rush period, a moderate standing load from Junction to Griswold and from Randolph to Chene, a total distance of about 4 miles, the cars changing their load to a considerable extent at Woodward. The curve of car loading for the maximum hour follows that for the rush hour period very closely. The curve of maximum passengers on board a car in the congested district during the rush period follows the same general form.

The curve of average car loading during the rush period, west bound, shows a load of less than seating capacity up to the congested district. Leaving the congested district the cars carry a moderate standing load a distance of about 3 miles from Griswold to Junction. The curve of average car loading during the rush hour and maximum car loading in the rush period follow the same general form, but show heavier loading conditions. On the Delray Division west bound, there is a moderate standing load from Clark to Dearborn, a distance of about 2½ miles.

Trumbull Lines

The south bound Trumbull lines show a very even loading and unloading except at the transfer points and at Griswold Street, where these cars unload most of their downtown passengers. The same condition is shown by the north bound diagram. The curves of car loading south bound show that in the morning rush hour the average passengers on cars do not reach the seating capacity. The average passengers on cars during the maximum hour of this period was but slightly over the seating capacity, and the maximum



passengers on any car observed were only a moderate load at Trumbull Street at the maximum point. North bound there is a heavier loading, the average for the evening rush period showing a heavy standing load from Michigan to Forest, a distance of 2½ miles. The curve for average passengers during the maximum hour shows slightly less than this average curve, this being due to the different days on which the observations were taken. The maximum passengers on car during this period shows a maximum load at Trumbull Street of a very heavy amount.

Myrtle Lines

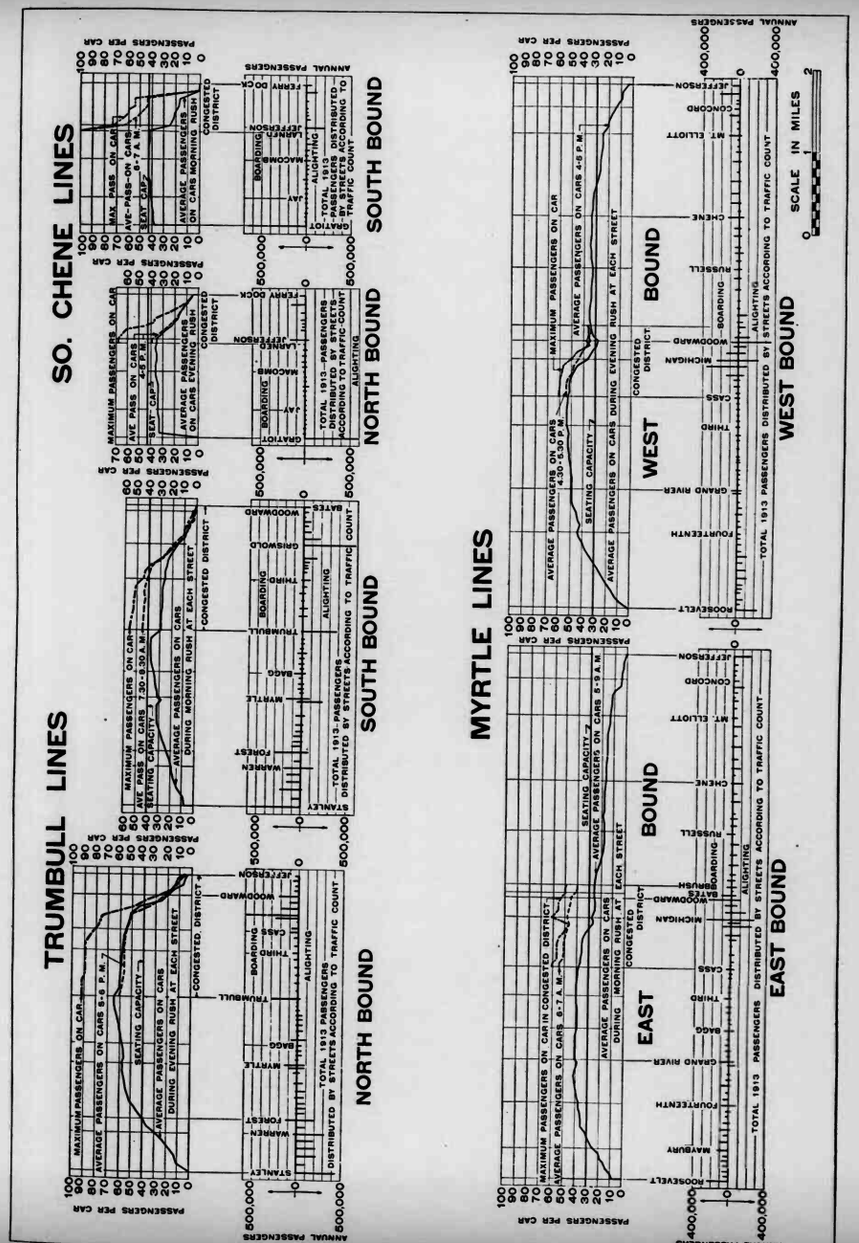
These lines, both east bound and west bound, show loading and unloading of a very even amount throughout the length of the line with considerably greater amounts in the congested district, although this is not as marked as for other lines. Of the east bound cars the loading curves show that during the morning rush period there was a very moderate standing load from Fourteenth to Michigan, a distance of 2½ miles. The passengers on cars for the maximum hour and for the heaviest loaded cars follow the same general form of curve and are considerably greater, although they do not at any time show an excessive loading. On the west bound cars the maximum period occurs in the afternoon, and the curve of average passengers shows a slight standing load from Chene to Woodward, where the cars load rapidly, having a heavy standing load from Michigan to Fourteenth, a distance of 3½ miles. The curves of average passengers on cars for the maximum hour and maximum passengers on single car follow the same general form, showing a maximum loading at Cass Avenue, but not a loading that is excessive.

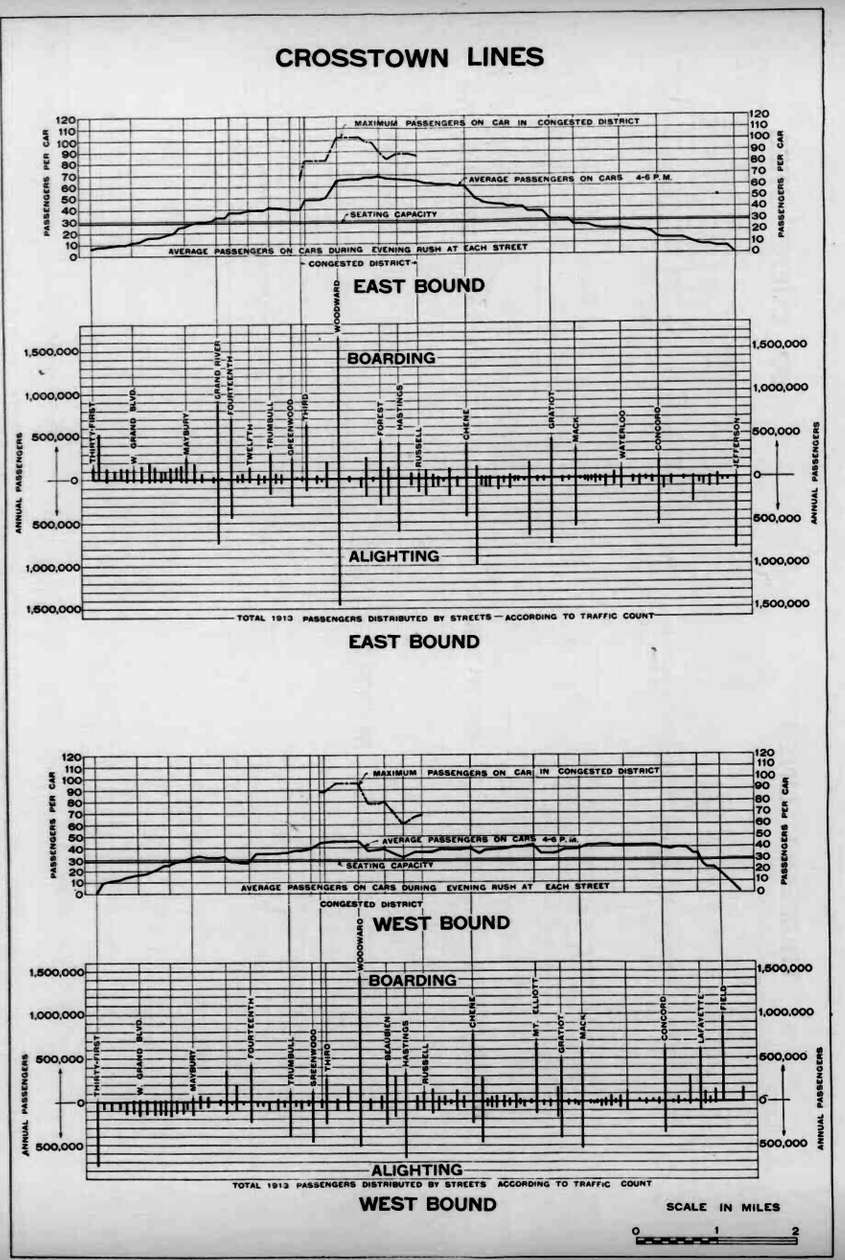
South Chene Lines

These lines in both directions show heavy loading and unloading at Gratiot and a comparatively even loading and unloading over the rest of the line, the transfer points being the heaviest. North bound, the rush hour period is in the evening, and the average for passengers on cars is somewhat below the seating capacity. The maximum passengers on the single car occurred at Jefferson Avenue, but is not excessive. South bound, the rush period is in the morning, the average passengers on cars during the period being about seating capacity, the maximum capacities on single car, however, being very crowded at Jefferson, these passengers being unloaded between Jefferson and the ferry. This haul is so short that while the loading is excessive the condition is not serious.

Crosstown Lines

In both directions these lines show very heavy loading and unloading at all transfer points, particularly Woodward, with comparatively light loading and unloading at other points. The curves of car loading east bound show a standing load from Grand River to Mack, a distance of 4½ miles, this condition being very heavy between Third and Chene, a distance of 2 miles. This loading is for the evening rush period and is, considering the capacity of the cars, excessive. The loading of maximum passengers on car during this period follows the same general form and shows a very excessive loading at





Woodward Avenue and an undue crowding between Third and Russell Streets. The curves of car loading west bound are a maximum in the evening rush period, and show a moderate standing load from Lafayette to Fourteenth, a distance of 5½ miles. The curve of maximum passengers on car in the congested district follows the same general form but is very much heavier, being a maximum at Woodward and extending from Russell to Greenwood. Considering the capacity of these cars, this maximum loading is excessive.

Hamilton Lines:

The Hamilton lines show heavy loading in the congested district north bound and heavy unloading in the same district south bound, with heavy loading and unloading at transfer points such as Forest and Warren, and a fairly even distribution of traffic over the rest of the line.

The curves of car loading show moderate standing loads from the congested district to Forest in both directions, a distance of about 2 miles. The average passengers on cars for the maximum hour and the maximum passengers on a car in the congested district follow the same general form, but are greater in amount. The same condition applies to the south bound traffic.

Brush Lines:

The Brush lines show the same general characteristics of heavy loading and unloading in the congested district and at transfer points. The curves of average car loading in the rush period indicate moderate standing loads while those of average car loading and the maximum car loading in the congested district show heavy standing loads from Jefferson to East Adams.

Sherman Lines:

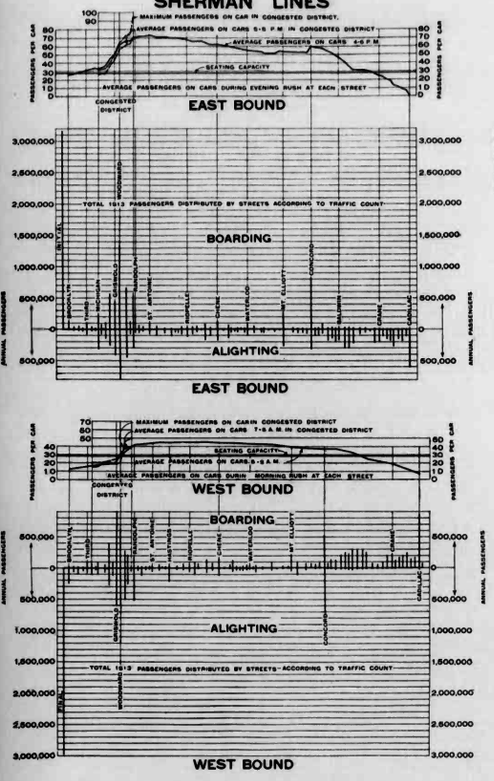
The Sherman lines east bound and west bound show the same general characteristics of heavy loading and unloading in the congested district and at important transfer points, such as Mt. Elliott and Concord and at the east terminus, at Cadillac.

The curves of average car loading east bound during the evening rush period show a light load up to the congested district and a heavy standing load from Randolph to Baldwin, a distance of 3½ miles. The curves of average car loading in the rush hour and maximum car loading in the congested district follow the same general form but show considerably more crowding.

The curve of average car loading west bound shows a moderate standing load from Concord to Woodward, a distance of 3½ miles, with a light load from Woodward to Brooklyn. The curves of average car loading during the rush hour and maximum car loading in the congested district follow the same general form but show slightly greater crowding.

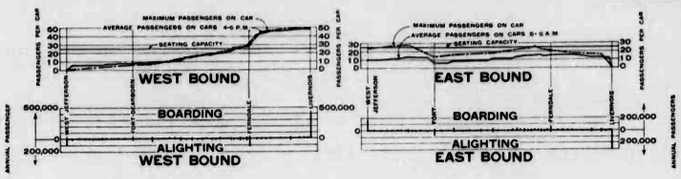
It should be noted in connection with these lines that the observations were not carried west of Brooklyn. This was due to the fact that construction work interfered with the operation of the Sherman line over its regular route. The "initial" and "final" indicate respectively the passengers on the cars at this point who have boarded east bound before reaching this street, and the passengers on board west bound cars when leaving this street.

SHERMAN LINES

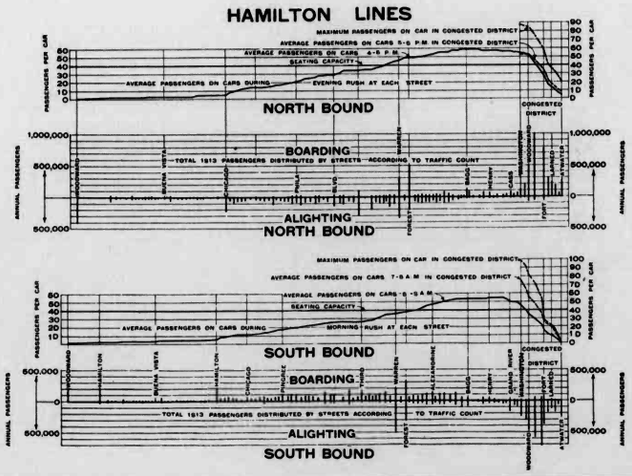

MAXIMUM PASSENGERS ON CAR IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 5-6 P.M. IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 4-6 P.M.
SEATING CAPACITY
AVERAGE PASSENGERS ON CARS DURING EVENING RUSH AT EACH STREET
CONGESTED DISTRICT
EAST BOUND
TOTAL 1913 PASSENGERS DISTRIBUTED BY STREETS ACCORDING TO TRAFFIC COUNT
BOARDING
ALIGHTING
EAST BOUND
MAXIMUM PASSENGERS ON CAR IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 7-9 A.M. IN CONGESTED DISTRICT
SEATING CAPACITY
AVERAGE PASSENGERS ON CARS 6-9 A.M.
AVERAGE PASSENGERS ON CARS DURING MORNING RUSH AT EACH STREET
WEST BOUND
BOARDING
ALIGHTING
TOTAL 1913 PASSENGERS DISTRIBUTED BY STREETS ACCORDING TO TRAFFIC COUNT
WEST BOUND

SPRINGWELLS LINES

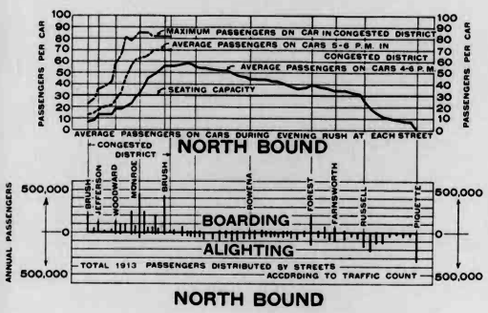
SCALE IN MILES 0 1 2



HAMILTON LINES

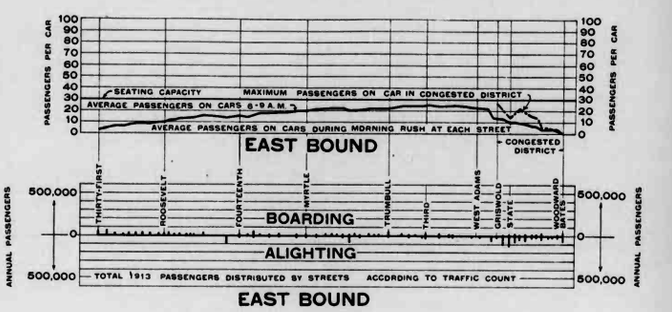

MAXIMUM PASSENGERS ON CAR IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 5-6 P.M. IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 4-6 P.M.
SEATING CAPACITY
AVERAGE PASSENGERS ON CARS DURING EVENING RUSH AT EACH STREET
NORTH BOUND
BOARDING
TOTAL 1913 PASSENGERS DISTRIBUTED BY STREETS ACCORDING TO TRAFFIC COUNT
ALIGHTING
NORTH BOUND
MAXIMUM PASSENGERS ON CAR IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 7-9 A.M. IN CONGESTED DISTRICT
SEATING CAPACITY
AVERAGE PASSENGERS ON CARS 6-9 A.M.
AVERAGE PASSENGERS ON CARS DURING MORNING RUSH AT EACH STREET
SOUTH BOUND
BOARDING
TOTAL 1913 PASSENGERS DISTRIBUTED BY STREETS ACCORDING TO TRAFFIC COUNT
ALIGHTING
SOUTH BOUND

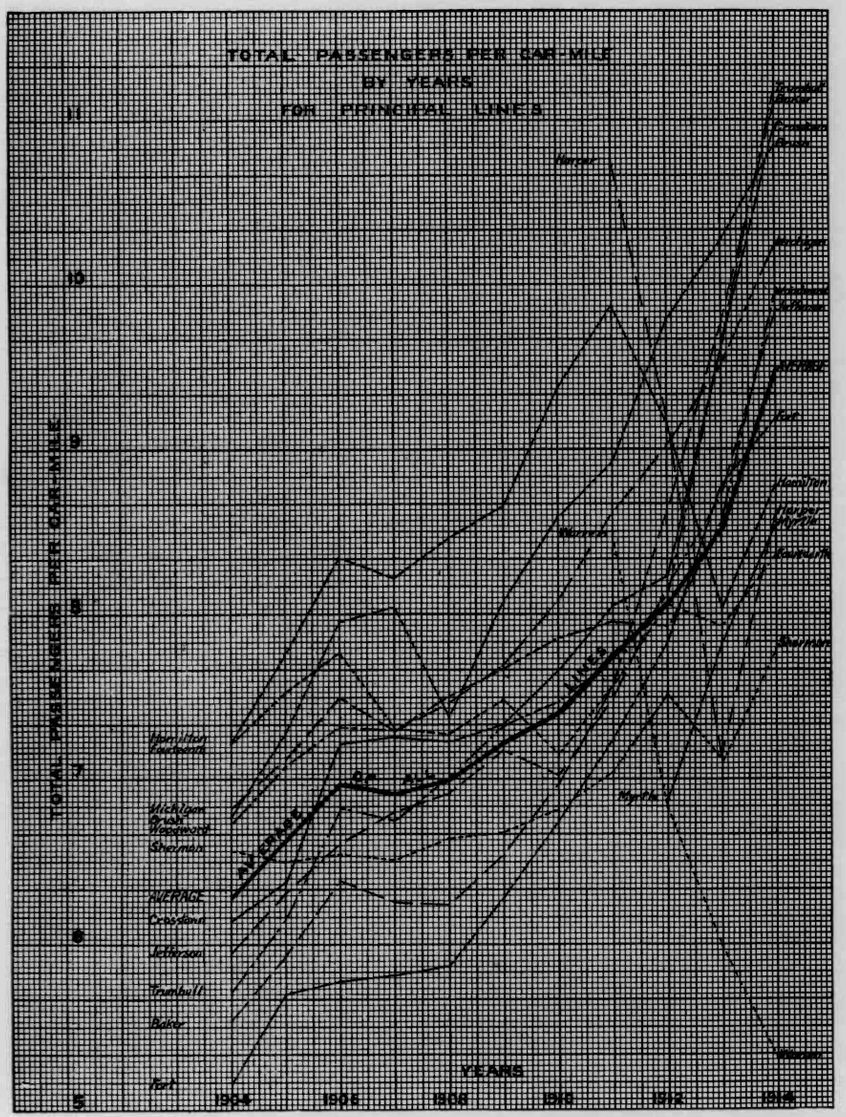
BRUSH LINES


MAXIMUM PASSENGERS ON CAR IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 5-6 P.M. IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 4-6 P.M.
SEATING CAPACITY
AVERAGE PASSENGERS ON CARS DURING EVENING RUSH AT EACH STREET
NORTH BOUND
CONGESTED DISTRICT
BOARDING
ALIGHTING
TOTAL 1913 PASSENGERS DISTRIBUTED BY STREETS ACCORDING TO TRAFFIC COUNT
NORTH BOUND
MAXIMUM PASSENGERS ON CAR IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 6-7 A.M. IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 6-9 A.M.
SEATING CAPACITY
AVERAGE PASSENGERS ON CARS DURING MORNING RUSH AT EACH STREET
SOUTH BOUND
CONGESTED DISTRICT
BOARDING
ALIGHTING
TOTAL 1913 PASSENGERS DISTRIBUTED BY STREETS ACCORDING TO TRAFFIC COUNT
SOUTH BOUND

WEST WARREN LINES

SCALE IN MILES 0 1 2


SEATING CAPACITY
MAXIMUM PASSENGERS ON CAR IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 6-9 A.M.
AVERAGE PASSENGERS ON CARS DURING MORNING RUSH AT EACH STREET
EAST BOUND
CONGESTED DISTRICT
BOARDING
ALIGHTING
TOTAL 1913 PASSENGERS DISTRIBUTED BY STREETS ACCORDING TO TRAFFIC COUNT
EAST BOUND
MAXIMUM PASSENGERS ON CAR IN CONGESTED DISTRICT
AVERAGE PASSENGERS ON CARS 4-6 P.M.
SEATING CAPACITY
AVERAGE PASSENGERS ON CARS DURING EVENING RUSH AT EACH STREET
WEST BOUND
CONGESTED DISTRICT
BOARDING
ALIGHTING
TOTAL 1913 PASSENGERS DISTRIBUTED BY STREETS ACCORDING TO TRAFFIC COUNT
WEST BOUND



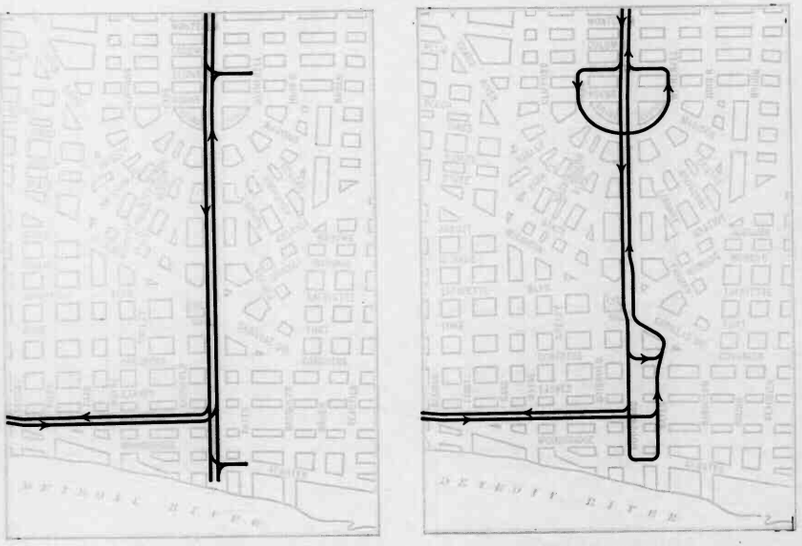
PRESENT ROUTING AND PROPOSED REROUTING FOR INDIVIDUAL CITY LINES

Under this heading is given a complete set of maps and descriptions showing the present routing and the proposed rerouting of the various street car lines entering the congested district. For convenience, this comparison is shown on twin maps for each line. Following these pairs of maps is given first the present routing, being a brief description of the principal routes operated under the various headings, such as Woodward Lines, Fort Lines, etc. The numbers preceding the route names, in the case of the present routing, are the same as the designating numbers given in Appendix A. The numbers given under the rerouting heading, designating the various special routes, are simply for reference and have no special significance. Only the principal routes over which are operated a considerable number of trips per annum have been described in detail, and the description has further been limited to those upon which changes are recommended. The remainder of the routes not specially mentioned are not recommended for change.

The car house capacities and yardage spaces are believed to be generally ample and suitably located, with only slight additions and modifications, for the successful operation of cars on the proposed rerouted lines.

WOODWARD LINES

Total passengers carried in 1904..... 12,990,027
Total passengers carried in 1914..... 47,457,294



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

6 House—Elizabeth Y.. Via Woodward to Elizabeth Street Y. Returning via Woodward to destination.
4 House—River ..... Via Woodward to Atwater Y and return.
8 Log Cabin—River... Same as 4.
2 House—depot ..... Via Woodward to Jefferson to Third Street Y. and return.
1 Log Cabin—depot.... Same as 2.

PROPOSED REROUTING

1 Log Cabin—Grand Circus loop..... Via Woodward to Elizabeth to Park to Witherell to Elizabeth to Woodward. Returning via Woodward to destination.

2 House—Grand Circus loop ..... Same as 1

3 Log Cabin—Cadillac Sq. loop..... Via Woodward to Congress to Bates to Cadillac Square to Woodward. Returning via Woodward to destination.

4 House — Cadillac Sq. loop..... Same as 3.

5 Log Cabin—river.... Via Woodward to Atwater to Bates to Cadillac Square to Woodward. Returning via Woodward to destination.

6 House—river ..... Same as 5.

7 Log Cabin—depot... Via Woodward to Jefferson to Third Street Y. Returning via Jefferson to Bates to Cadillac Square to Woodward to destination.

8 House—depot ..... Same as 7.

The Woodward Avenue lines handle the largest number of passengers of any single system of routes in the city, having a traffic density, or number of passengers per mile of track, practically twice that of any other line.

The rerouting of this line is based upon the necessity of a through service via Woodward Avenue to the river, together with a series of loops for returning the cars north on Woodward at 3 points, carrying through only such cars as the traffic of the different sections may warrant.

Reroutes Nos. 1 and 2 provide for turning cars around Grand Circus Park to answer the double purpose of the "tripper" service now run from Elizabeth Street north in the early morning, and also to give the service now rendered by the specials which are run empty north bound in the afternoon through the congestion, loading only north of Grand River Avenue. The erection of large buildings and hotels around Grand Circus Park and the rapid growth of the retail district northward on Woodward Avenue warrants this service in rush hours.

Reroutes Nos. 3 and 4 provide for turning a considerable proportion of the Woodward cars at Congress Street through Bates into Cadillac Square. The present routing of the cars on Woodward Avenue to the downtown district requires them to be run to either the Atwater Y at the river or to the Third Street Y at the abandoned site of the old Michigan Central depot. The traffic counts show it is unnecessary to route all the cars to these points. At certain seasons of the year the river traffic is heavy; at others the traffic on lower Woodward Avenue is limited to the local needs. At times a very considerable number of cars can legitimately be turned at Congress Street, tending not only to relieve the crossing difficulties on lower Woodward Avenue, but also to improve the service for passengers loading at Cadillac Square and farther north. This will allow the dispatching of cars north bound from Cadillac Square at uniform intervals.

Reroutes Nos. 5 and 6 provide for the through river traffic, which varies

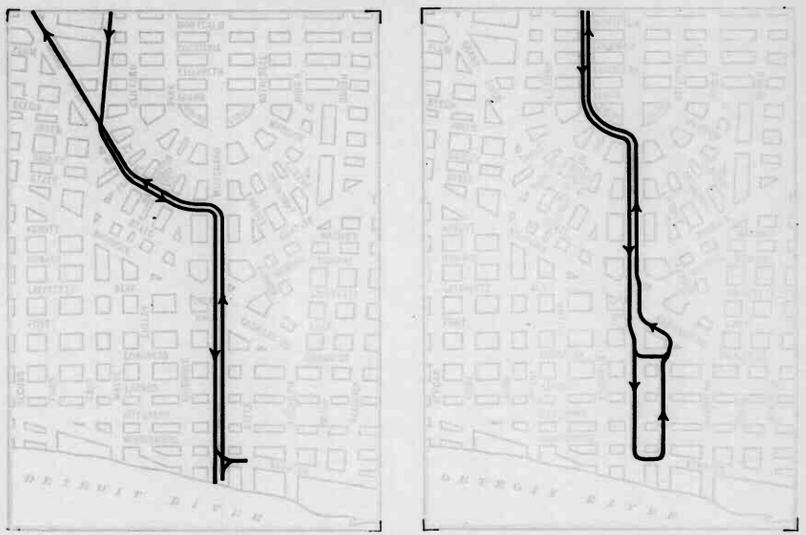
widely with the season of the year. The cars loop from Woodward around Atwater and up Bates to Cadillac Square, thence as previously described for Reroutes Nos. 3 and 4.

Reroutes Nos. 7 and 8 provide for the traffic from points along Jefferson Avenue up Woodward by a diversion of a certain proportion of the cars to the Third Street Y, returning via Jefferson and Bates to Cadillac Square, and dispatched thence up Woodward Avenue, as in Reroutes Nos. 3 and 4.

The placing of the north bound tracks close to the curb at the fountain just north of Monroe Avenue answers the double purpose of supplying a good loading point and facilitating the movement of the north bound vehicle traffic. (See MAP 6.)

HAMILTON LINES

Total passengers carried in 1904..... 4,507,999
Total passengers carried in 1914..... 13,174,280



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 Through—river .....From Woodward and Manchester via private right-of-way to Metzger to Oakman to Webb to Hamilton to Greenwood to Holden to Third to Ledyard to Cass to Grand River to Woodward to Atwater Y.
Returning via Woodward to Grand River to Greenwood to Hamilton to Webb to Oakman to Metzger to private right-of-way to destination.

2 Limits—river .....From city limits via Hamilton, etc., same as Route 1.

3 Pingree—river .....From Pingree and Hamilton via Hamilton, etc., same as Route 1.

4 House—river.....From Holden and Greenwood via Holden to Third, etc., same as Route 1.

PROPOSED REROUTING

1 City limits — Cadillac Sq. loop..... From city limits via Hamilton to Holden to Third to Ledyard to Sproat to Park to Woodward to Congress to Bates to Cadillac Square.
Returning via Woodward to Park to Bagg to Greenwood to Hamilton to destination.

2 Pingree — Cadillac Sq. loop..... From terminal via same route as Reroute 1 to Cadillac Square and returning to terminal.

3 House — Cadillac Sq. loop..... Same as 2.

4 Through—river ..... From terminals via Reroute 1 to Woodward to Atwater to Bates to Cadillac Square.
Returning via Woodward, etc., as Reroute 1.

5 Limits—river ..... Same as 4.

6 Pingree—river ..... Same as 4.

7 House—river ..... Same as 4.

These routes divide the Hamilton line in proportion to the river and City Hall traffic between the Cadillac loop and the river loop, thereby gaining the same advantages mentioned in the description of the Woodward Avenue loops. A radical change is shown in the Hamilton route by carrying it up Woodward Avenue to Grand Circus, thence on Park Blvd. to where it can connect with its present tracks on Greenwood and Third Avenue. The object is to give additional service to Grand Circus district and place a line parallel with Woodward along the growing retail district north of Adams Avenue. This will tend to relieve the Woodward Avenue cars of passengers who now ride to the northern portions of Woodward Avenue and walk west to their homes.

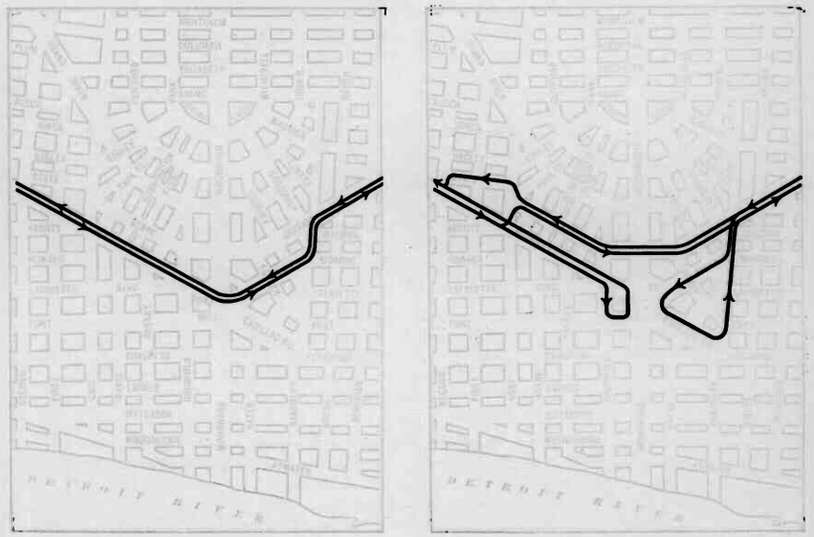
This diversion does not reduce the service now rendered by this line to any district except that along Grand River between Bagg and Woodward Avenue, which is amply served by the Jefferson lines.

This arrangement also relieves the crossing congestion at Grand River and Griswold, and separates the crossing interferences on Woodward Avenue a greater distance.

Another object is to remove street cars from Clifford between Washington Boulevard and Cass Avenue to provide a north and south automobile route, as discussed under "Vehicle Traffic."

MICHIGAN LINES

Total passengers carried in 1904. 13,604,582
Total passengers carried in 1914. 46,484,661



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

3 Michigan—Gratiot .. From terminal via Michigan to Monroe to Randolph to Gratiot to destination. Returning via same route.

1 Michigan—Mack ... Same as 3.

4 Mack—Atwater Y... From terminal via Mack to Gratiot to Randolph to Monroe to Woodward to Atwater Y. Returning via same route.

7 Leesville—Atwater Y ..... From terminal via Gratiot to Randolph to Monroe to Woodward to Atwater Y. Returning via same route.

PROPOSED REROUTING

1 Michigan — City Hall loop ..... From terminal via Michigan to Griswold to Fort to Woodward to Michigan to destination.

2 Gratiot — Cadillac Sq. loop ..... From terminal via Gratiot to Randolph to Monroe to Woodward to Cadillac Square to Randolph to Gratiot to destination.

3 Mack—Cadillac Sq. loop ..... From terminal via Mack to Gratiot to Randolph to Monroe to Woodward to Cadillac Square to Randolph to Gratiot to Mack to destination.

4 Michigan — Gratiot through ..... From terminal via Michigan to Cass to State to Gratiot to destination.
Returning via Gratiot to State to Second to Michigan to destination.

5 Michigan — Mack through ..... From terminal via Michigan to Cass to State to Gratiot to Mack to destination.
Returning via Mack to Gratiot to State to Second to Michigan to destination.

Under the proposed rerouting a through car service is provided on this line via State Street, which is so proportioned as to provide ample service for the legitimate through passengers. The rest of the car service on this line is to be cut in two at Woodward Avenue, the east portion of the cars being looped around Cadillac Square and the west portion of the cars looped around City Hall.

This line at present carries all of its passengers on cars routed through the center of the city. There is, however, a certain proportion of through riders on these cars. In the morning rush hour period the travel is from both sides of the city to the central delivery district, where the cars almost completely unload. On continuing their trip they pick up new outbound passengers, a comparatively small number riding through. In the evening rush hour the reverse of this general movement takes place.

The diagram on page 59, compiled from the loading and unloading observations in the congested district, gives combined the afternoon rush hour service of the Michigan, Baker and Sherman lines from Abbott and Michigan to Pingree Square (Randolph and Gratiot). This shows that the City Hall loop would have loaded conveniently 65% of the passengers west bound during the evening rush, and only 39 of the 112 cars which crossed Woodward Avenue per hour were really necessary. Similarly, the Cadillac Square loop would have loaded conveniently 55.4% of the east bound travel, and only 53

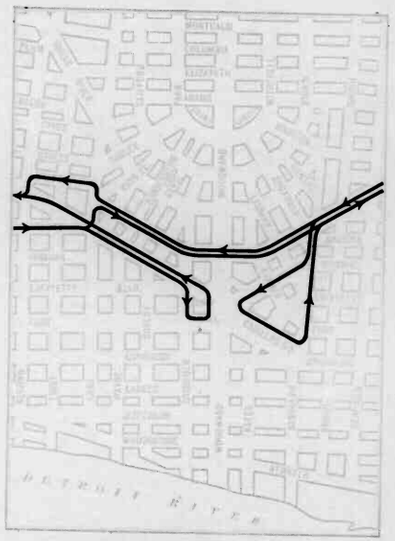
instead of 118 cars actually run per hour need have crossed Woodward Avenue.

A similar compilation for the non-rush hours shows that only 30.4% of the total traffic leaving the district at Abbott Street west bound was through travel, or 19 through cars per hour were necessary instead of the 60 actually run across Woodward. East bound, 32.4% of the traffic leaving the district at Pingree Square was through travel, or 21 cars per hour were necessary instead of 63 per hour, which actually crossed Woodward Avenue.

BAKER LINES

Total passengers carried in 1904..... 7,412,317
Total passengers carried in 1914..... 23,330,757

PRESENT ROUTING



PROPOSED REROUTING

PRESENT ROUTING

1 Baker—Chene ..... From terminal via Dix to Twenty-fourth to Baker to Trumbull to Abbott to Michigan to Monroe to Randolph to Gratiot to Grandy to Jos. Campau to destination.

Returning via Jos. Campau to Chene to Gratiot to Randolph to Monroe to Michigan to Porter to Brooklyn to Baker to Twenty-third to Dix to destination.

PROPOSED REROUTING

1 Baker—City Hall loop ..... From terminal via present routing to Michigan, thence via Michigan to Griswold to Fort to Woodward to Michigan to Porter, thence as at present to destination.

*2 Chene — Cadillac Sq..... From terminal via Jos. Campau to Chene to Gratiot to Randolph to Monroe to Woodward to Cadillac Square to Randolph to Gratiot to Grandy to Chene to Jos. Campau to destination.

3 Baker through..... From terminal via present routing to Michigan to Cass to State to Gratiot to Grandy to Jos. Campau to destination.

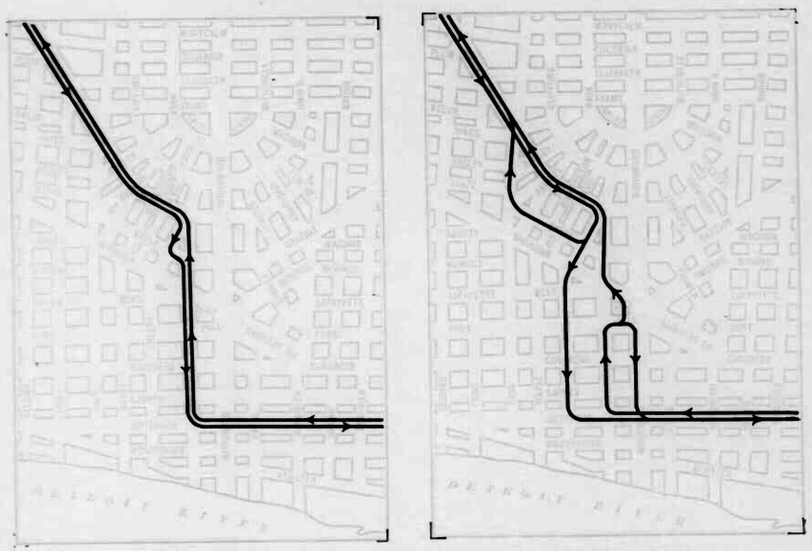
Returning via Jos. Campau to Chene to Gratiot to State to Second to Porter, thence as at present to destination.

*This line when run as rerouted no longer passes over any part of Baker Street and should be designated by some new name, such as "Chene-Cadillac Square loop."

On this line the traffic conditions in the congested district are practically identical with the previously discussed Michigan lines, and the proposed rerouting therefore follows the same general plan.

JEFFERSON LINES

Total passengers carried in 1904..... 14,368,873
Total passengers carried in 1914..... 38,158,023



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 and 2 Jefferson—
Grand River.....From terminal via Jefferson to Griswold to Grand River to destination.
Returning via Grand River to Griswold to State to Griswold to Jefferson to destination

PROPOSED REROUTING

1 Jefferson through....From terminal via Jefferson to Griswold to Fort to Woodward to Michigan to Griswold to Grand River to destination.
Returning via Grand River to Griswold to Shelby to Jefferson to destination.

2 Jefferson — City
Hall loop .....From terminal via Jefferson to Griswold to Fort to Woodward to Jefferson to destination.

3 Grand River—State
St. loop .....From terminal via Grand River to Griswold to State to Cass to Grand River to destination.

The investigation of the traffic on this line indicates clearly that it carries a much larger proportion of through business than any other line which can be considered a through or cross-town line. The congestion and delays are due principally to the crossing of the heavy Woodward Avenue, Fort Street and Michigan-Gratiot traffic, and the bad congestion at the corner of Grand River and Griswold, which is caused by the number of lines meeting at this point, and the lack of proper clearance curves.

Taking these in order, the interference at Woodward and Jefferson is reduced approximately two-thirds by the looping of the Woodward and Hamilton Avenue lines at Grand Circus and Cadillac Square. The present bad crossing at Fort is reduced to a single crossing of this line, and the congestion on Griswold is further relieved by eliminating all of the heavy interurban service from this street, as will be noted under "Interurban Lines."

Turning east on Fort, the rerouted Jefferson lines pass around the City Hall loop, keeping outside of the Michigan-City Hall loop, turning west on Michigan on the west bound track, and thence north on Griswold without any further intersection of street car traffic until State is reached. The return route is on Shelby, making only right-angle crossings at Michigan, Fort, Congress and Larned. This eliminates over 50% of the car crossing interferences at present encountered and yet continues Jefferson as a through line.

Placing the east bound line on Shelby instead of Griswold not only reduces the crossings and consequent delays, but gives a transfer point from the Fort and Myrtle lines, and from the lines on Michigan a full block from the present congestion on Griswold.

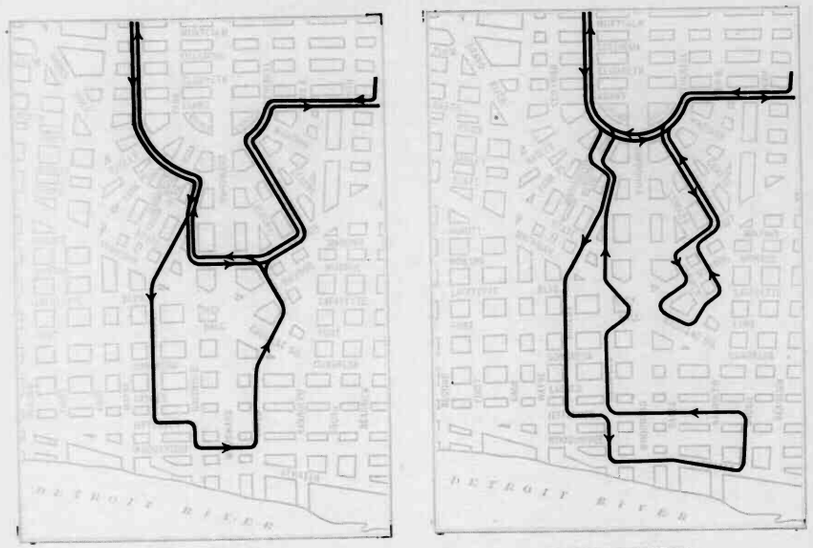
A transfer in front of the City Hall with all of the other loop lines is secured in such a manner that passengers will be but little interfered with by vehicle or other traffic.

Reroute No. 2 provides a Jefferson loop for "trippers" via the City Hall, which can also be utilized effectively for the Belle Isle traffic.

Reroute No. 3 is also for the present a "tripper" route for the Grand River end of the Jefferson line. This will give a direct service from the shopping and business district out Grand River.

FOURTEENTH AND WARREN WEST LINES

	Fourteenth	Warren West
Total passengers carried in 1904	14,491,705	.....
Total passengers carried in 1914	31,697,638	1,915,640



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 Fourteenth through. From Fourteenth and Milwaukee Y via Fourteenth to Locust to Henry to Clifford to Griswold to Shelby to Jefferson to Griswold to Woodbridge to Bates to Farmer to Gratiot to Broadway to Witherell to Adams to Hastings to Piquette to Beaubien to Bethune to Oakland to Woodland Avenue Y.

Returning via Oakland to Bethune to Beaubien to Adams to Witherell to Broadway to Gratiot to State to Griswold to Clifford to Bagg to Fourteenth to Milwaukee Y.

3 Fourteenth—Clay From Fourteenth and Milwaukee Y via Fourteenth to Locust to Henry to Clifford to Griswold to Shelby to Jefferson to Griswold to Woodbridge to Bates to Farmer to Gratiot to Broadway to Witherell to Adams to Hastings to Piquette to Beaubien to Bethune to Oakland to Clay to Olney Y.

Returning via Clay to Oakland to Bethune to Beaubien to Adams to Witherell to Broadway to Gratiot to State to Griswold to Clifford to Bagg to Fourteenth to Milwaukee Y.

9 Hastings belt..... From Forest and Fourteenth via Fourteenth to Locust to Henry to Clifford to Griswold to State to Gratiot to Broadway to Witherell to Adams to Hastings to Forest to Fourteenth.

10 Beaubien belt..... From Fourteenth and Warren via Warren to Beaubien to Adams to Witherell to Broadway to Gratiot to State to Griswold to Clifford to Bagg to Fourteenth to Warren.

1 Warren West..... From Thirty-first and Warren via Warren to Fourteenth to Locust to Henry to Clifford to Griswold to Shelby to Jefferson to Griswold to Woodbridge to Bates to Farmer to Gratiot to State to Griswold to Clifford to Bagg to Fourteenth to Warren to Thirty-first.

PROPOSED REROUTING

1 Warren West and Fourteenth west loop. From terminal via Fourteenth to Locust to Henry to Park to Washington to Clifford to Griswold to Shelby to Jefferson to Griswold to Atwater to Brush to Jefferson to Griswold to Fort to Woodward to Michigan to Griswold to Clifford to Washington to Park to Bagg to Fourteenth to destination.

2 Fourteenth—Cadillac Sq. loop..... From terminal via Oakland to Bethune to Beaubien to Adams to Witherell to Broadway to Gratiot to Farmer to Monroe to Woodward to Cadillac Square to Bates to Library to Gratiot to Broadway to Witherell to Adams to Hastings to Piquette to Beaubien to Bethune to Oakland to destination.

3 Fourteenth through Hastings and Beaubien belts..... From terminal via Fourteenth to Locust to Henry to Park to Witherell to Adams to Hastings to Forest to Fourteenth to destination.

Also from Fourteenth via Warren to Beaubien to Adams to Witherell to Park to Henry to Fourteenth to destination.

The Fourteenth Street lines as at present operated are extremely circuitous and involved. Many of the present routings are not warranted by the traffic, particularly in the downtown district.

Reroutes Nos. 1 and 2 cut the present system in two distinct parts, designated as the West loop and the Cadillac Square loop. Reroute No. 3 provides for a cross-town service via Grand Circus. All of these routes run on Locust and Bagg one block farther east than at present, to Park, turning south on Park instead of on Clifford, as in the case of the Hamilton line. This will better serve the growing retail district along Woodward Avenue and free Clifford for automobile traffic. The present loading and unloading of the Fourteenth Street lines in the district west of Woodward Avenue down to the river warrants the continuation of this route in the manner outlined. The downtown portion of the west loop has been extended to reach the Grand Trunk Depot on Brush Street, to give a service from this depot to the general transfer point at the City Hall. As outlined, the route west on Jefferson and north on Griswold will follow the same track as the Jefferson line previously described, thereby eliminating the existing street car interferences.

Reroute No. 2, or the Cadillac Square loop, follows substantially the present routing down to State and Farmer, at which point the cars will turn south on Farmer to Monroe and loop through Cadillac Square, returning by Bates and Library to Gratiot, to Broadway, thence as at present to its easterly terminal. In this manner the district in which the bulk of the unloading and loading occurs on the east portion of the present lines will be fully served and the transfer traffic from the river front at present carried by this line north bound through Bates Street will be handled by other lines.

At the present time the Fourteenth Street cars routed west across State carry a comparatively light load at the Woodward crossing, except during the rush hours. The loading on this line, as on others passing through this district, occurs at or within one block of Woodward. The traffic to the north and west carried by the present lines will be well served by the West loop (Reroute No. 1) and by the through line at Grand Circus.

Reroute No. 3, giving through service via Grand Circus from one side of the city to the other, may be comparatively light at first, but will grow with the growth of the shopping district north and the filling up of the large buildings in this neighborhood.

The continuation of the existing belt service via State, Forest and Warren can be secured by a route via Grand Circus. We doubt whether the necessity of permanently continuing such routes can be determined at present. This will depend upon the readjustment of traffic resulting from the rerouting.

The Warren West reroute follows the Fourteenth West loop (Reroute No. 1).

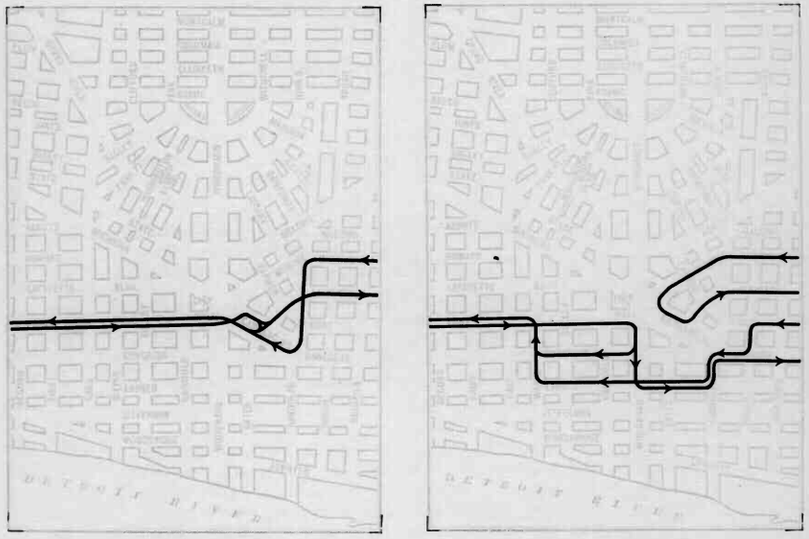
The extension of the Fourteenth Street line is recommended from its present terminus at Grand Boulevard and Fourteenth Street north to the city line, making a Y at Nicolet.

It is also recommended that the West Warren line be extended westerly to the tracks of the D. T. R. R.

These extensions are shown on MAP 2, by dashed lines.

FORT LINES

Total passengers carried in 1904..... 9,574,416
Total passengers carried in 1914..... 25,316,295



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 West Jefferson — Bates ..... From south Dearborn via Jefferson to Clark to Fort to Cadillac Square.
Returning via Fort to Clark to Jefferson to destination.

7 Fort Street ..... From Fort and Dearborn via Fort to Cadillac Square.
Returning via Fort to destination.

2 Fort—Bridge ..... From Fort and Dearborn via Fort to Cadillac Square to Bates to Lafayette to Baldwin Avenue Y.
Returning via Lafayette to Field to Jefferson to Helen to Lafayette to Elmwood to Monroe to Randolph to Cadillac Square to Fort to destination.

PROPOSED REROUTING

1a Fort — City Hall loop ..... From Fort and Dearborn via Fort to Woodward to Congress to Wayne to Fort to destination.

1b West Jefferson— City Hall loop..... From South Dearborn via West Jefferson to Clark to Fort to Woodward to Congress to Wayne to Fort to Clark to West Jefferson to destination.

2 East Fort—Cadillac Sq. loop..... From Baldwin Avenue Y to Field to Jefferson to Helen to Lafayette to Elmwood to Monroe to Woodward to Cadillac Square to Bates to Lafayette to destination.

3 Bridge — Cadillac Sq. loop ..... From Field and Jefferson to Helen to Lafayette to Elmwood to Monroe to Woodward to Cadillac Square to Bates to Lafayette to Field to Jefferson to destination.

4 Fort through..... From Fort and Dearborn via Fort to Woodward to Larned to Randolph to Congress to Mt. Elliott to Jefferson to Field Y.
Returning via Jefferson to Mt. Elliott to Fort to Brush to Congress to Randolph to Larned to Wayne to Fort to destination.

Reroutes Nos. 1a and 1b turn the Fort Street line south along Woodward to Congress, and thence west to Wayne to Fort. This gives a transfer loading point on the west side of Woodward Avenue practically as convenient as the present loading arrangement, and avoids the crossing delays.

The present through service of the Fort lines to Belle Isle bridge is relatively light and considered as a through line the traffic is very unbalanced.

The present traffic on the west end of the line on Fort and West Jefferson is very much heavier than the traffic east of Cadillac Square. The through cars, as on the other through lines, are now utilized much below their capacity, loading and unloading heavily in Cadillac Square, both going east and west.

Reroutes Nos. 2 and 3 provide for cutting the Fort line in two parts, looping the easterly part through Cadillac Square, and operating the westerly part over Reroutes 1a and 1b.

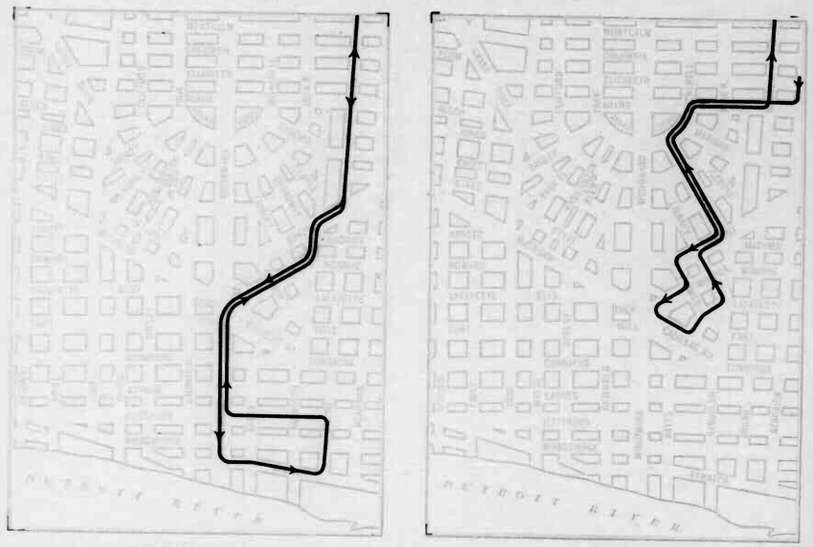
Reroute No. 4 preserves a through Fort route by continuing it east along Fort to Woodward, turning south to Larned, and thence east to Randolph. This avoids the crossing of the Woodward line at its heaviest point and follows the general course of the other Fort lines through the general transfer point at the City Hall. The easterly portion of this line is to be run on Congress and Fort in order to remove, as far as possible, the present objection that this line is carried too far north. Running directly east from Cadillac Square and Randolph along Congress and returning via Fort, Brush and Congress to this same corner, a much more direct route is obtained, avoiding the congested district and the objectionable crossings.

It will be noted that Reroutes Nos. 2 and 3 provide for service from both the Baldwin Y on Lafayette and the Field Y on Jefferson, via the present routes to Cadillac Square and return. This will warrant the operation of a better service than the present combination of loop and through routing between these points.

We believe it would be desirable to consolidate the 4 lines operating on Monroe, Lafayette, Fort and Congress Streets east of Randolph so as to have all the cars east bound run on Fort and all the cars west bound on Lafayette. The present distribution on 4 parallel streets on account of the light traffic warrants only such an infrequent car service that the public would be better served by concentrating the traffic on two streets. This, however, would involve the abandoning of considerable mileage of tracks and would bring up so many other questions that it is not recommended in our proposed rerouting. It should be considered, however, in the future development of the lines in this part of the city.

BRUSH LINES

Total passengers carried in 1904..... 3,255,862
Total passengers carried in 1914..... 6,778,476



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 Brush St.—depot.... From Harper Y on Russell via Russell to Farnsworth to St. Antoine to Rowena to Brush to Gratiot to Randolph to Monroe to Woodward to Atwater.
Returning via Brush to Jefferson to Woodward to Monroe to Randolph to Gratiot to Brush to Rowena to St. Antoine to Farnsworth to Russell to destination.

PROPOSED REROUTING

1 Brush St.—Cadillac Sq. loop ..... From Piquette and Russell via Russell to Farnsworth to Beaubien to Adams to Witherell to Broadway to Gratiot to Farmer to Monroe to Woodward to Cadillac Square to Bates to Library to Gratiot to Broadway to Witherell to Adams to Brush to Rowena to St. Antoine to Frederick to Hastings to Piquette to destination.

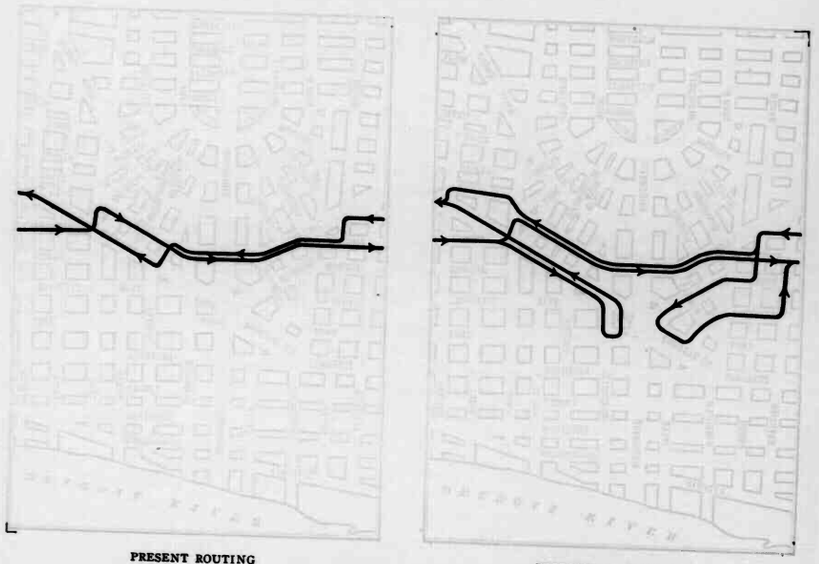
The Brush line north of Gratiot is at present operated over a single track with turnouts, giving a very limited service. It will be noted that the increase in traffic in the past nine years on this line is one of the smallest of any of the lines in the city. This is undoubtedly due to the impossibility of increasing the service, either in frequency or speed, by reason of the single track operation.

The proposed rerouting with a loop on Piquette will make possible more frequent service and better running time. The line is to be brought east on Adams to Grand Circus Park, and down Broadway following the Fourteenth Street line. This will give a service much more direct to the Woodward Avenue shopping district.

The portion of the present Brush line running down Woodward and across Atwater to the Grand Trunk depot is abandoned. The traffic on this portion of the line is extremely light, and the depot will be better served by the West Fourteenth Street loop, which will deliver the passengers to the general transfer station in front of the City Hall.

SHERMAN LINES

Total passengers carried in 1904..... 11,642,229
Total passengers carried in 1914..... 17,114,209



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 Sherman limits..... From Dix and Livernois via Livernois to Toledo to Scotten to Porter to Twenty-fourth to Howard to Twelfth to Abbott to Cass to State to Gratiot to Macomb to Russell to Catherine to Jos. Campau to Waterloo to Mt. Elliott to Kercheval to Hurlbut Y.
Returning via Kercheval to Mt. Elliott to Hendricks to Jos. Campau to Sherman to Hastings to Clinton to Brush to Macomb to Gratiot to State to Shelby to Michigan to Porter to Scotten to Toledo to Livernois to destination.

PROPOSED REROUTING

1 Toledo — City Hall loop ..... From Dix and Livernois via present route to Michigan to Griswold to Fort to Woodward to Michigan to Porter to destination as at present.

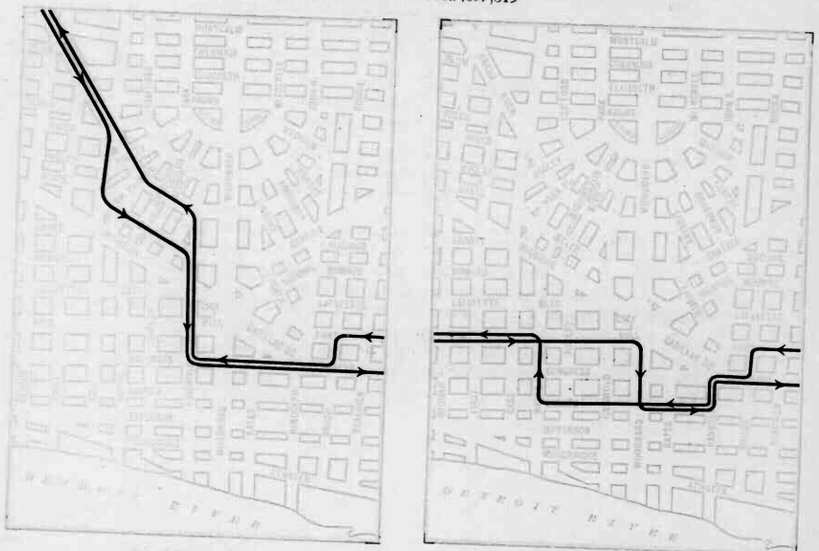
2 Sherman—Cadillac Sq. loop ..... From Hurlbut Y via present routing to Brush to Monroe to Cadillac Square to Bates to Lafayette to Beaubien to Macomb, thence via present routing to destination.

3 Sherman through.... From Dix and Livernois via present route to Hurlbut Y. Returning via present route to State to Second to Porter, thence via present route to destination.

Investigation of the traffic on this line between Abbott, Michigan, Broadway and Randolph, shows practically the same characteristics as the other east and west lines, the great bulk of the loading and unloading being at or near Woodward. The recommendations made regarding the equipment and method of operation of the north and south lines make possible the continuation of a considerable cross-town car service on State. The rerouting provides that this line be divided into a base through service running from Dix and Livernois to the Hurlbut Y and a "tripper" service via the City Hall and Cadillac Square loops.

MYRTLE LINES

Total passengers carried in 1904.....Not run as a separate line
Total passengers carried in 1914.....7,007,619



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 Myrtle line ..... From Roosevelt and Myrtle via Myrtle to Grand River to Cass to State to Griswold to Congress to Mt. Elliott to Jefferson to Field Avenue Y.
Returning via Jefferson to Mt. Elliott to Fort to Brush to Congress to Griswold to Grand River to Myrtle to destination.

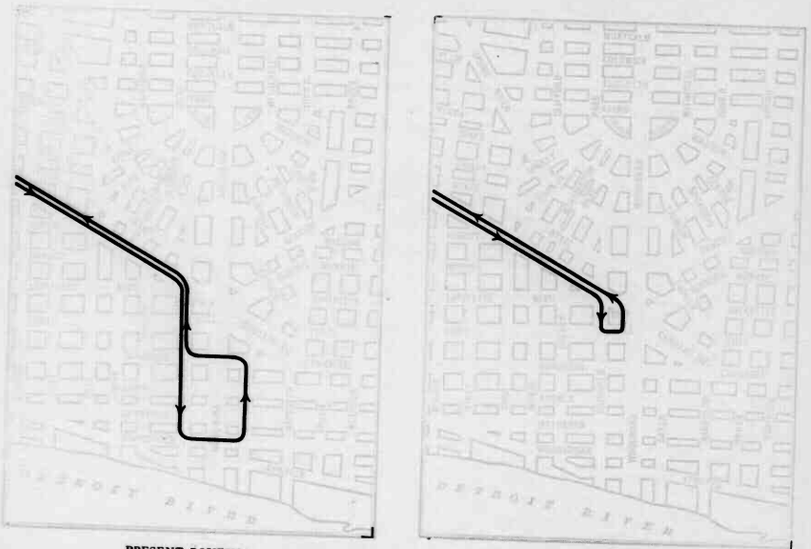
PROPOSED REROUTING

1 Myrtle line ..... From Roosevelt Y and Myrtle via Myrtle to Trumbull to Fort to Woodward to Larned to Randolph to Congress to Mt. Elliott to Jefferson to Field Avenue Y.
Returning via Jefferson to Mt. Elliott to Fort to Brush to Congress to Randolph to Larned to Wayne to Fort to Trumbull to Myrtle to destination.

The passenger counts on this line, through the congested district, from the corner of Middle and Cass to Congress and Brush, indicate heavy unloading and loading from Shelby and State to Congress and Randolph. The heaviest loading and unloading is at Griswold and Michigan and at Congress and Woodward. Both of these points would be served by cutting this line in two and looping each part around the City Hall and through Cadillac Square. The cross-town service rendered, however, by this line and its convenience as a local transfer across the lower part of the city warrants for the present a continuance of this route as a through line until congestion in the downtown district reaches such a point that further curtailment of cross-town service is necessary. On the west end this line is rerouted down Trumbull to Fort to give a much needed connection in this district.

TRUMBULL LINES

Total passengers carried in 1904..... 4,855,264
Total passengers carried in 1914..... 6,654,871



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 Trumbull line .....From terminal via Trumbull to Michigan to Griswold to Woodbridge to Bates.
Returning via Bates to Congress to Griswold to Michigan to Trumbull to destination.

PROPOSED REROUTING

1 Trumbull — City Hall loop .....From terminal carhouse via Trumbull to Michigan to Griswold to Fort to Woodward to Michigan to Trumbull to destination.

The rerouting of the Trumbull line is planned to eliminate and simplify the car crossings in the congested district while maintaining its general functions.

The traffic originating south of Congress Street is so small a proportion of that in the congested district tributary to the Trumbull line that the complications involved in routing it down to Jefferson are not warranted.

HARPER LINES

Total passengers carried in 1914..... 8,927,290

PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 Harper line .....From terminal via Harper to Mt. Elliott to Hendricks to Jos. Campau to Sherman to Hastings to Clinton to Brush to Macomb to Gratiot to State to Shelby to Jefferson to Griswold to Woodbridge to Bates to Farmer to Gratiot to Macomb to Russell to Catherine to Jos. Campau to Waterloo to Mt. Elliott to Harper to destination.

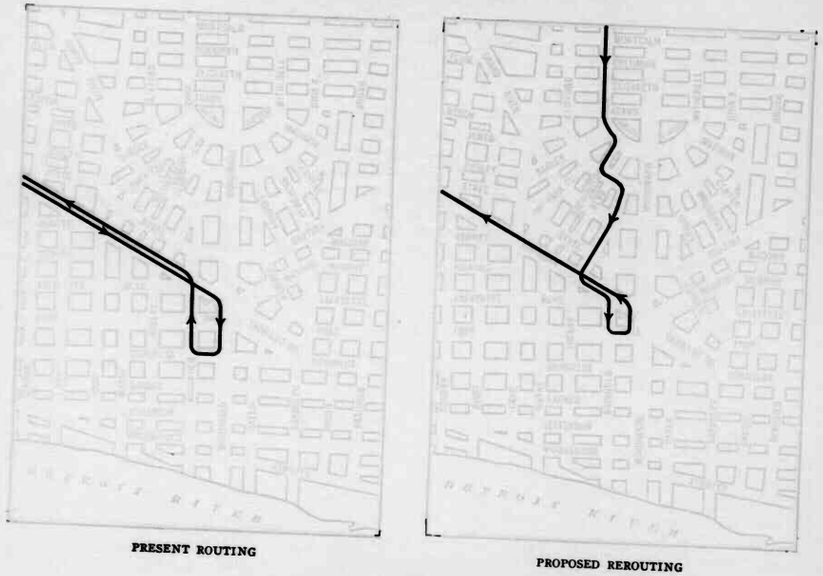
PROPOSED REROUTING

1 Harper — Cadillac Sq. loop .....From terminal on Harper via Harper to Mt. Elliott to Hendricks to Jos. Campau to Sherman to Hastings to Clinton to Brush to Monroe to Woodward to Cadillac Square to Bates to Lafayette to Beaubien to Macomb to Russell to Catherine to Jos. Campau to Waterloo to Mt. Elliott to Harper to destination.

The Harper line was originally a shuttle service running from Harper to Mt. Elliott and Gratiot. The present routing loops around the entire downtown district, duplicating locally the service given by a number of other lines. The traffic counts indicate that 80% of the business on this line does not go beyond the City Hall and vicinity. The line at present is utilized as a transfer from the river front north bound to the Gratiot, Mack, Baker and other lines. This class of service is amply provided for by the Woodward, Hamilton and Fourteenth rerouted lines. Therefore reroute 1 turns the Harper cars on the inner loop through Cadillac Square.

MICHIGAN CENTRAL DEPOT LINE.

Total passengers carried in 1914..... 2,282,584
(This line was not put into service until Dec. 27, 1913.)



PRESENT ROUTING

PROPOSED REROUTING

PRESENT ROUTING

1 Michigan depot ..... From Marantette and Fifteenth via Marantette to Fourteenth to Michigan to Woodward to Congress to Griswold to Michigan to Fourteenth to Dalzelle to Fifteenth and Marantette.

PROPOSED REROUTING

1 Michigan depot—City Hall loop..... From Marantette via Marantette to Fourteenth to Locust to Henry to Park to Washington to Clifford to Griswold to Shelby to Michigan to Griswold to Fort to Woodward to Michigan, thence via present route to destination.

The traffic on this line, as is usual in this class of service, while enough to fill the cars periodically at train times, is not a continuous traffic of sufficient amount to warrant a short interval schedule through the day on more than one route. The running time from the corner of Fourteenth and Michigan to Shelby and Michigan is only 2 minutes less than the running time of the Fourteenth Street cars from Fourteenth and Locust to the same corner. This rerouting is aimed to provide for the growth of Grand Circus district, both in office buildings and large hotels, and modifies the present depot route so as to take in this district in one direction. The growth of Grand Circus district warrants this diversion and the slight addition to the running time to the downtown district. This reroute will pass the principal downtown hotels and office buildings on the west side of Woodward Avenue, running around the general transfer loop at the City Hall.

This reroute as here indicated is the best compromise to serve all of the districts possible with a single route on the west side of Woodward Avenue.

CROSSTOWN LINES

These lines do not require changing immediately. The triangular district between Mack and Gratiot, extending as far east as Cadillac, is building up quite rapidly and a service in this district is needed. An extension of this line on Forest to Cadillac (see MAP 2) is recommended.

SOUTH CHENE LINES, SPRINGWELLS LINES, VICTOR LINES, THIRD STREET DEPOT LINES

The present service rendered by these lines is of a special nature and does not require change at the present time.

JUNCTION AVENUE BELT LINE (GRAND BELT)

The Grand Belt line, running north and south on Junction Avenue from Fort to Warren, went into operation October 28, 1914. Observations of the traffic on this line demonstrate its usefulness. It passes through a densely populated district and gives a much needed transfer between the various east and west lines.

On MAP 2 is indicated a suggestion of the continuation of this line to reach Milwaukee and Baltimore, following McGraw for the greater part of the distance. The population along the Junction Avenue section of this line is one whose destination is most likely to be the factory district near Baltimore and Milwaukee.

The more direct this route can be made between these two districts the more likely it is to be well patronized and divert travel which now passes through the center of the city.

PRESENT ROUTING AND PROPOSED REROUTING FOR INTERURBAN LINES

(See MAP 10)

Present interurban station at Larned and Griswold.
Proposed interurban station at East Cadillac Square.

DETROIT UNITED RAILWAY—PONTIAC DIVISION

Number of trips made in 1913 22,322
Number of passengers carried inside one fare zone in 1913....1,827,506

PRESENT ROUTING

From terminal via Woodward to Congress to Griswold to Larned to Shelby to Jefferson.

Returning via Jefferson to Griswold to Congress to Woodward to destination.

PROPOSED REROUTING

From terminal via Woodward to Congress to Bates to Cadillac Square.

Returning via Cadillac Square to Randolph to Gratiot to Brush to Adams to Witherell to Elizabeth to Woodward to destination.

This line carries through cars to Pontiac via Royal Oak and Birmingham.

DETROIT UNITED RAILWAY—FLINT DIVISION

Number of trips made in 1913 12,816
Number of passengers carried inside one fare zone in 1913....827,725
Present routing and proposed rerouting same as for Pontiac Division.
This line carries through cars to Romeo and Flint via Lake Orion Junction.

DETROIT UNITED RAILWAY—ORCHARD LAKE DIVISION

Number of trips made in 1913 11,367
Number of passengers carried inside one fare zone in 1913.....637,920

PRESENT ROUTING

From terminal via Grand River to Cass to State to Griswold to Larned to Shelby to Jefferson.

Returning via Jefferson to Griswold to Grand River to destination.

PROPOSED REROUTING

From terminal via Grand River to Trumbull to Fort to Third to Jefferson to Bates to Cadillac Square.

Returning via Cadillac Square to Randolph to Larned to Wayne to Fort to Trumbull to Grand River to destination.

This line carries through cars to Northville via Farmington Junction and to Pontiac via Farmington Junction and Orchard Lake.

DETROIT UNITED RAILWAY—WYANDOTTE DIVISION

Number of trips made in 1913 15,709
Number of passengers carried inside one fare zone in 1913....1,345,685

PRESENT ROUTING

1. From terminal via West Jefferson to Clark to Fort to Griswold to Larned to Shelby to Jefferson.

Returning via Jefferson to Griswold to Fort to Clark to West Jefferson to destination.

2. From terminal as above to Fort to Cadillac Square.

Returning via Cadillac Square to Fort thence as above to destination.

PROPOSED REROUTING

From terminal via West Jefferson to Clark to Fort to Third to Jefferson to Bates to Cadillac Square.

Returning via Cadillac Square to Randolph to Larned to Wayne to Fort to Clark to West Jefferson to destination.

This line carries through cars to Trenton via Wyandotte.

RAPID RAILWAY

Number of trips made in 1913 16,770
Number of passengers carried inside one fare zone in 1913....1,177,933

PRESENT ROUTING

From terminal via Gratiot to Randolph to Monroe to Michigan to Griswold to Larned to Shelby to Jefferson.

Returning via Jefferson to Griswold to Michigan to Monroe to Randolph to Gratiot to destination.

PROPOSED REROUTING

From terminal via Gratiot to Farmer to Monroe to Cadillac Square.

Returning via Cadillac Square to Randolph to Gratiot to destination.

This line carries through cars to Port Huron via Anchorville and Marine City.

RAPID RAILWAY—SHORE LINE DIVISION

Number of trips made in 1913 ..... 6,616½
Number of passengers carried inside one fare zone in 1913....395,131

PRESENT ROUTING

From terminal via Jefferson to Bates to Congress to Griswold.
Returning via Griswold to Jefferson to destination.

PROPOSED REROUTING

From terminal via Jefferson to Bates to Cadillac Square.
Returning via Cadillac Square to Randolph to Jefferson to destination.
This line carries through cars to Mt. Clemens via Lakeside.

DETROIT, JACKSON & CHICAGO RAILWAY

Number of trips made in 1913..... 16,219½
Number of passengers carried inside one fare zone in 1913..1,163,268

PRESENT ROUTING

From terminal via Michigan to Griswold to Larned to Shelby to Jefferson.
Returning via Jefferson to Griswold to Michigan to destination.

PROPOSED REROUTING

From terminal via Michigan to Trumbull to Fort to Third to Jefferson to Bates to Cadillac Square.

Returning via Cadillac Square to Randolph to Larned to Wayne to Fort to Trumbull to Michigan to destination.

This line carries through cars to Ypsilanti and Jackson.

DETROIT, MONROE & TOLEDO SHORT LINE RAILWAY

Number of trips made in 1913 14,202
Number of passengers carried inside one fare zone in 1913....790,109

PRESENT ROUTING

From terminal via Fort to Griswold to Larned to Shelby to Jefferson.
Returning via Jefferson to Griswold to Fort to destination.

PROPOSED REROUTING

From terminal via Fort to Third to Jefferson to Bates to Cadillac Square.

Returning via Cadillac Square to Randolph to Larned to Wayne to Fort to destination.

This line carries through cars to Toledo via Wyandotte and Monroe.

SUBWAY

Two subway routes have been referred to in Part I:

ROUTE A.—A rapid transit subway with its own independent car service.

ROUTE B.—A short section of subway to accommodate street cars and remove them from the street congestion.

ROUTE A

Route A consists of a double track subway on Woodward Avenue from Fort Street to some point north of Manchester Avenue where a convenient portal, yard and surface terminal can be provided and includes a single track loop to run from Woodward Avenue west on Fort to Shelby, south on Shelby to Jefferson, east on Jefferson to Woodward and north on Woodward to Fort. Stations are to be located as shown on MAP 11 at points controlled by present traffic conditions and intermediate stations about one third mile apart are to be built on Woodward Avenue, their location to be determined by conditions at the time subway is built.

Feeder Street Car Lines

On MAP 11 is shown a system of feeder surface street car lines. The lines indicated by long heavy dashes are laid out for independent car service running only to transfer stations on the subway with a view to curtailing the downtown service from these lines. Some of these are new lines intended as probable feeders, to build up the outlying district. Lines shown by short dots are existing lines from which a transfer to the subway is expected for a certain portion of the passengers. On account of the light local service on the surface tracks of Woodward Avenue, the Forest-Warren cross-town might be operated during the rush hour with some tripper cars, one set operating east of Woodward Avenue on the present cross-town route, looping from Forest, north on Woodward, returning east via Warren and Forest, and a similar service on the west side looping south on Woodward from Warren, returning west on Forest to destination.

Interurban Lines

The Interurban lines entering the city from the north, northwest and northeast might be diverted so as to run through the subway, or a transfer might be arranged for at the terminal station of the subway. This might necessitate some special platform arrangements on the cars or at the stations.

General Dimensions

Clear width between side walls, single track section....12 feet 6 inches
Clear width between side walls, double track section....25 feet 0 inches
Headroom above base of rail .....14 feet 6 inches

Length

Fort Street to Manchester Avenue, double track..... 5.84 miles
Southern Terminal loop Fort to Jefferson, single track..... 0.66 miles
Total of single track .....12.34 miles

Alignment

Generally straight on double track there being only slight swings to follow center line of Woodward Avenue. On Southern Terminal Loop four curves of not less than 150 feet radius.

Grades

Portal grades, not to exceed 5.22%
Southern Terminal loop maximum grade.....1.38%
Double track maximum grade 0.54%
All station platforms are to be constructed on level tangents.

Structural Features

The subway is to be constructed mainly of steel and concrete, as shown by the typical sections on PLAN 19. The cross-section is rectangular, with transverse steel bents spaced 5′ 0″ center to center, built of rolled I-beams for the walls and roof, with central columns in the double track section built of angles and plates. These bents carry concrete walls and roof formed of shallow arches between bents, and the whole rests upon a concrete floor. The entire structure will be waterproofed.

Drainage

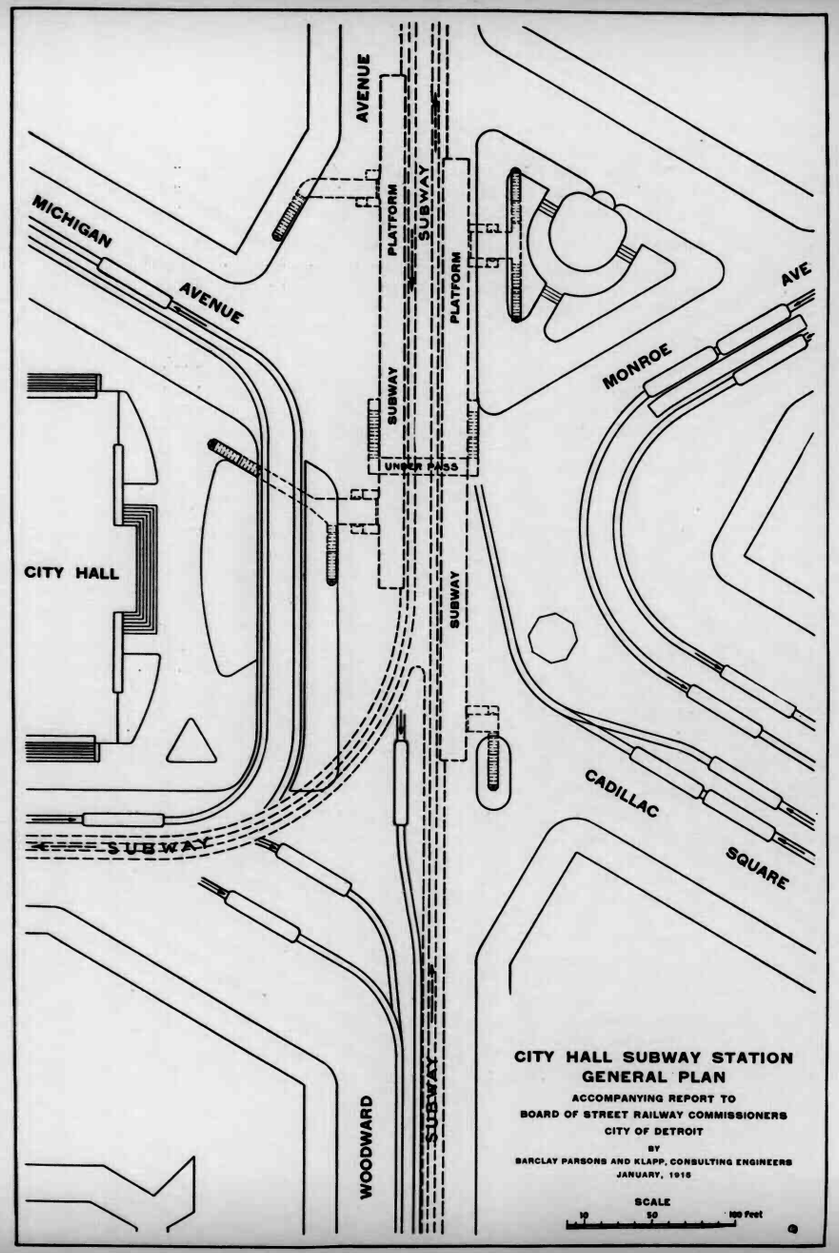
The water entering the subway from seepage or any other causes is to be drained into the sewers on either side wherever the relative elevations will allow. This method will be followed north of Peterboro Street. In the southern portion of the subway drainage sumps will be installed at the three low points as indicated in the profile on PLAN 12. These sumps will be equipped with electric pumps.

Station Construction

The construction of a typical station is shown by plan and section on PLAN 21. The platforms are 250′ long and 10′ wide and are designed to be level with the car floors. One entrance and exit stairway 6′ 0″ wide is provided on each side and additional entrances and exits may be provided later if the amount of traffic at any station should make it necessary. The entrances and exits are placed on the near side next to the curbs of the cross streets. The stairway entrances are covered on the street by kiosks.

The station walls are to be finished in tile and mosaic, the roof is to have a plaster finish and the floor a granulithic one. The stairways are to be provided with safety treads, and the kiosks with wire glass panels and roof, with cast-iron frames.

The construction of the special station at City Hall is shown on PLAN 20 and on the following page. The structural features of this and all other stations are in general the same as those of the typical station described, the changes



being made as required by the varying conditions encountered. All structural features of both the subway and the stations are based upon investigations made by us in sufficient detail to insure the entire feasibility of construction of the proposed plan, and have been developed sufficiently to insure the general accuracy of the estimates submitted.

Method of Construction

On account of the slight depth below the surface of the street at which the subway is to be constructed it is expected that the entire excavation shall be made by breaking through from the street surface, but where the traffic conditions require, "cut and cover" methods must be used, such as have been employed in recent subway construction in other cities. Such methods provide for substantially decking over all streets and sidewalks during construction and thus maintaining surface traffic. The portion of the subway located south of the M. C. R. R. crossing must be constructed in this manner, but north of the railroad Woodward Avenue is 100 feet wide and the traffic is so much lighter that open trench excavation would probably be permissible. The specifications should contain clauses providing for the maintenance of street traffic, both on longitudinal and cross streets, and also for means of access to buildings.

The material to be excavated in constructing the subway is mainly clay, varying from a yellow clay at the surface to a stiff blue clay at the bottom of the excavation. No bed rock will be encountered as its depth averages more than 100 feet from the ground surface. It is expected that no gravel or boulders of any importance will be encountered, but occasional sand pockets will be found. At these points additional timbering during construction will be necessary. The largest of the sand pockets lies across Woodward Avenue in the neighborhood of Grand Circus.

Except for about 1200 feet of single track on the southern terminal loop, where the base of the rail reaches a minimum elevation of 91.00 (City datum), the entire subway will lie above the mean level of the river. The nature of the soil is such as to make it very impervious to water and therefore no very serious difficulty from ground water during construction is anticipated. The subway route crosses the bed of the old Savoyard Creek between Congress and Larned Streets and of the old May's Creek near the Grand Circus, but the water at these points can be taken care of.

Surface Obstructions

On the surface of the street the main obstruction encountered by the subway is the surface car tracks. These must be supported during construction and provision has been made in the estimate for so doing.

Trees

There are no trees of any importance on the subway route which need be disturbed during construction.

Subsurface Obstructions

The main obstructions encountered on the subway route below the street surface are as follows:

Building Foundations.. Abutting Property

Tunnels ..... Central Heating Co.
Murphy Power Co.
Edison Illuminating Co.
Public Lighting Commission.
Ford & Dime Bank Buildings.

Sewers ..... City of Detroit.

Water Mains ..... Board of Water Commissioners.
Fire Department.

Conduits ..... Edison Illuminating Co.
Public Lighting Commission.
Michigan State Telephone Co.
Fire Department.
Police Department.
Private Companies.

Gas Pipes ..... Detroit City Gas Co.

Of these obstructions, the conduits and gas pipes are of minor importance and may remain in general in their present locations, as the depth of cover above the subway is greater than the general depth at which they are found.

Building Foundations

No buildings on the proposed subway route encroach either above or below the street surface beyond the curb lines and the widths of the streets are such that no very extensive underpinning of foundations will be necessary. At stations it will be necessary to arrange passages and stairways so that there will be no conflict with foundations and vaults. These must be designed when the final location of stations has been determined upon.

Tunnels

The tunnels on the subway route are shown on PLAN 18. Of these the Central Heating Company tunnels in Grand River Avenue and the Ford Building tunnel in Griswold Street are at such a depth that they need not be disturbed. The Edison Illuminating Company tunnels in Woodward Avenue, between Park Boulevard and State Street, will be disturbed by the subway and must be rebuilt or their contents carried in ducts. There are 2,026 feet of tunnels of sizes varying from 4′ 0″ Cyl. to 4′ 4″ x 5′ 2″.

The Murphy Power Company tunnel crossing Woodward Avenue and Shelby Street in Congress Street and the P. L. C. tunnel in Michigan Avenue will be disturbed, and portions of them must be rebuilt to pass under the subway. The Murphy tunnel is 6′ x 5′ in size and the P. L. C. tunnel is 6′ x 3′ 6″.

Sewers

The sewers are the most important of the obstructions to be encountered in building the subway. The present location of sewers in Woodward Avenue

and their tributaries and also all the sewers encountered in the route of the southern terminal loop of the subway are shown in plan and profile on PLANS 15, 16 and 17. The proposed new sewer construction with all the necessary new connections are shown in relation to the subway on PLANS 12, 13 and 14.

It is designed to abandon entirely the present 9′ 0″ and 4′ 0″ sewers in Woodward Avenue and construct two new sewers on either side throughout the length of the subway from the river to the northern terminal loop. In order to avoid the southern terminal loop and to obviate the necessity of installing syphons under the subway at Fort Street and at Jefferson Avenue, the west side sewer is to be deflected from Woodward Avenue at the Grand Circus and is to be constructed in Washington Avenue to Michigan Avenue to Shelby Street and in Shelby Street on the west side of the subway loop to a new outlet in the river. The area included between this sewer and the east side sewer in Woodward Avenue south of Grand Circus is to be drained by the present 7′ 0″ sewer in Griswold Street. The elevation of this sewer is such that the subway can pass over it at both Fort Street and Jefferson Avenue without changing the sewer grade or installing syphons.

The new sewers have been designed to give a total capacity somewhat more than the existing sewers. It may be that at the time when construction is undertaken the city authorities may desire to build sewers of greater capacity, but our sewer design is believed to be ample for the actual needs.

The design calls for the following sewers in Woodward Avenue:

EAST SIDE

An 8′ cylinder sewer from the river to the south line of Baltimore Avenue at a slope of .00152. The invert has been designed at the same elevation at Jefferson Avenue as the present 9′ sewer.

An 8′ cylinder sewer from the south line of Baltimore Avenue to the north line of Seward Avenue, with a slope of .00078.

A 6′ cylinder sewer from the north line of Seward Avenue to the north line of Webb Avenue, with a slope of .00078.

A 3′ x 4′ 6″ sewer from the north line of Webb Avenue to a point north of the subway loop north of Labelle Avenue at a slope of .00117.

A 3′ x 4′ 6″ sewer to be connected at this last named point with the present 3′ x 4′ 6″ sewer on the center line of Woodward Avenue.

These East Side sewers are designed to take care of all the sewage and storm water tributary to both the existing Woodward Avenue sewers from the east side of Woodward Avenue between the river and the north terminal of the subway, with some increased capacity as before mentioned, and also from both sides of Woodward Avenue north of the north terminal of the subway. Connections shall be made with all the east side tributary sewers on the route.

WEST SIDE

An 8′ 0″ cylinder sewer from a new outlet in the river at the foot of Shelby Street passing to the west side of the subway loop in Shelby Street to Michigan Avenue, to Washington Avenue across the Grand Circus to Woodward Avenue to the center line of Elizabeth Avenue with a slope of .00136. The

invert has been designed at the same elevation at Jefferson Avenue as the present 9′ 0″ Woodward Avenue sewer.

A 7′ 0″ cylinder sewer in Woodward Avenue from the center line of Elizabeth Avenue to the south side of Baltimore Avenue with a slope of .00152.

A 7′ 0″ cylinder sewer from the south line of Baltimore Avenue to the north line of Seward Avenue, with a slope of .00078.

A 6′ cylinder sewer from the north line of Seward Avenue to the north line of Webb Avenue, with a slope of .00078.

A 3′ x 4′ 6″ sewer from the north line of Webb Avenue to a dead end at the north line of Ford Avenue, with a slope of .00117.

These West Side sewers are designed to take care of all the sewage and storm water tributary to both the existing Woodward Avenue sewers from the west side of Woodward Avenue between the river and Ford Avenue, with some increased capacity as before mentioned. Connections shall be made with all the west side tributary sewers on the route.

SOUTHERN LOOP

As explained above the 7′ 0″ cylinder sewer in Griswold Street will take care of all the drainage in the subway loop and also all the drainage between Washington Avenue and Woodward Avenue which cannot be turned into the new Washington Avenue sewer. A number of new connections must be made to connect sewers which are now tributary to the Woodward Avenue 9′ 0″ cylinder sewer, so that they shall drain into the new sewer. The present 4′ 0″ cylinder sewer in Shelby Street must be rebuilt on the east side of the subway in that street from the alley south of Fort Street to connection with the present 3′ 0″ x 4′ 6″ sewer in Larned Street.

The new Woodward Avenue sewers are shown in cross-section at High Street on PLAN 19 and typical uptown locations are shown in the typical station design on PLAN 21. The sewers are designed to be built completely outside of the exterior walls of the subway. Between Jefferson Avenue and Bagg Street they must be deflected to pass around the station platforms, but north of Bagg Street they are continued straight, passing under the station platforms. All manholes are centered on the center line of the sewers, thereby assisting their ventilation and allowing of their use for snow removal. It will be necessary to construct the entire new sewer system with all new connections before the construction of the subway is undertaken.

Water Mains

There are no water mains of any great importance running longitudinally on the subway route. The 8″, 10″ and 12″ pipes in Woodward Avenue must be rebuilt at the side of the structure for a greater part of the distance and provision has been made in the estimate for so doing. There are also some large mains which cross the subway route and the method of carrying these over the top of the subway is shown in PLAN 19, on which is drawn the 48″ water main crossing Woodward Avenue in High Street. The estimate includes provision for rebuilding all the water pipes encountered in the path of the subway.

Minor Obstructions

A method of disposition of the conduits and gas pipes is shown in the cross-section of Woodward Avenue at High Street on PLAN 19. They may, in general, be left undisturbed as previously explained, but must be supported and maintained in a safe condition for their usual service during construction, and provision has been made in the estimate for so doing.

ROUTE B

Route B consists of a single track downtown loop on Fort, Shelby, Jefferson and Woodward, the same as Route A with a two track section from Fort Street north to Grand Circus, where a portal will be constructed through which street cars can enter and leave this section of subway. Stations are to be located in general as shown on Subway PLAN 12.

Length

Fort Street to Grand Circus double track.....	0.43 miles
Southern Terminal loop Fort to Jefferson. Single track....	0.66 "
Total of single track.....	1.52 "

With the exception of Grand Circus portals, the alignment, grade, structural features, type of stations and method of construction for Route B is to be the same as for the corresponding portion of Subway, Route A.

Grand Circus Portals

The subway portal is designed for the operation of surface cars only, permitting a maximum width of 22 feet on the street surface and a length of 341 feet by using a grade of 5.22%. This brings the entire portal within the limits of Grand Circus Park which has been decreased on both sides to provide additional width for Adams Avenue, Woodward Avenue, Park Boulevard and Witherell Street. The design provides for a 39-foot roadway on each side of the portal and ample space for vehicles and pedestrians at all the street intersections.

Obstructions

It is designed to dispose of all surface and subsurface obstructions encountered on this subway route just as designed for Route A. It will not be necessary to construct the entire new sewer system for Woodward Avenue, but only that portion of it which lies south of Grand Circus. The new 8′ 0″ cylinder sewer on the west side of Woodward Avenue shall be connected at the center line of Elizabeth Street to the old 9′ 0″ cylinder sewer and the new 8′ 0″ cylinder sewer on the east side of Woodward Avenue shall be connected at the south line of Elizabeth Avenue to the old 4′ 0″ cylinder sewer. A 4′ 0″ overflow by-pass shall be constructed at an easy grade from the former connection to the latter connection so that when the west side sewer is taxed beyond its capacity in handling the effluent of the 9′ 0″ sewer, the overflow can be carried by the east side sewer. These features are shown on PLAN 12.

Estimates

ROUTE A

1.	Subway construction with 18 stations complete, including rebuilding all water mains, tunnels, pipes and conduits which will cause interference, all in accordance with plans attached, and including portal and tracks for Northern Terminal loop.....	$10,183,978
2.	Sewer construction	1,360,248
3.	Equipment of special steel cars sufficient to carry traffic estimated	2,160,000
4.	Electrical Equipment—sub stations and feeders.....	600,000
5.	Legal and preliminary	250,000
6.	Land damages, easements and items not estimated.....	650,000
7.	Interest during construction	1,100,000
	Engineering and construction contingencies included in items 1 and 2.	
	Total	$16,304,226

ROUTE B

1.	Subway construction with four stations complete, including rebuilding all water mains, tunnels, pipes and conduits which would cause interference, all in accordance with plans attached, including also portal at Grand Circus.....	$1,462,750
2.	Sewer construction	240,000
3.	Electrical equipment—sub station and feeders.....	100,000
4.	Legal and preliminary	200,000
5.	Land damages, easements and items not estimated.....	350,000
6.	Interest during construction	75,000
	Engineering and conctruction contingencies included in items 1 and 2.	
	Total	$2,427,750

VEHICLE TRAFFIC

The very unusual and general use of private automobiles for traveling about the city has produced a serious problem which must be considered in connection with the street railway traffic in the downtown district of Detroit. The parking of cars along the curb at 45 degrees in the business district, projecting 8 or 10 feet into the street, restricts the free passage for vehicle traffic in some blocks to such an extent as to seriously interfere with the freedom of street car movements and their loading and unloading. It is quite evident that this parking should be absolutely prohibited on certain of the narrow streets and very much restricted near the ends of all the blocks.

The parking of automobiles along the curbs opposite the safety zones forces vehicles passing parallel with the street cars to encroach upon the safety zones and jeopardizes pedestrians passing from the sidewalk to the safety zone.

The observance of the safety zones and the pedestrian crossings where indicated by white bands on the paving of the street is very excellently enforced by the traffic police. The observance of the parking restrictions, however, appears little respected by automobile owners.

The possibility of loading and unloading passengers at a given street corner with safety or whether a vehicle can pass between a street car and a row of parked automobiles without jamming and delaying the whole traffic on the street, should not depend upon the judgment of some automobile owner. The parking at these points should be absolutely prohibited and the rule rigidly enforced.

The transferring of the route of the Fourteenth Street line from Clifford to Park Blvd. has in view the freeing of Clifford from street cars to its junction with Cass Avenue. This street being wide and well paved would then provide a direct through route for the north and south automobile traffic on the west side of Woodward Avenue, connecting Washington Boulevard directly with Cass Avenue.

Supplementing this, the setting back of the curb line and the repaving of John R Street from Adams Avenue north should be undertaken to provide an attractive north and south thoroughfare on the east side of Woodward.

Such improvements, if accompanied with suitable ordinances giving the right-of-way to north and south vehicle traffic on these thoroughfares, as opposed to east and west streets, would result in diverting a very large proportion of this traffic, which now interferes considerably with the loading and unloading of the surface cars all along Woodward.

A further regulation requiring automobiles to stop with the cars, between Jefferson and Forest Avenue on Woodward, would facilitate the loading and unloading operations on this street and tend to restrict the vehicle traffic to that which is local and necessary.

The vehicle traffic across Woodward Avenue at the Campus Martius should be restricted, certainly during the rush hours, so as to prevent crossing from Michigan and Fort direct to Cadillac Square and Monroe, and vice versa.

West bound vehicles should pass from Cadillac Square and Monroe north around the fountain, to cross Woodward, thence out Michigan to Griswold, and thence west via Lafayette or Michigan.

East bound traffic on Michigan should also pass north of the fountain, going to Monroe, and south of the City Hall if bound for Cadillac Square.

East bound Fort Street traffic should pass east on Fort to Woodward, crossing south of the Pontchartrain Hotel, thence north on Woodward, turning east into Cadillac Square.

The north and south vehicle traffic on Woodward may be continued moving only with the cars.

This arrangement will prove beneficial in accelerating the vehicle traffic movement and at the same time relieve both the car and pedestrian crossings. On MAP 6 will be seen this routing by dashed lines with arrows indicating direction.

BELLE ISLE BRIDGE TRAFFIC

The congestion and interruption of the Jefferson Avenue service at the approach to the Belle Isle Bridge, on Sundays, holidays and special occasions, is annoying to the regular patrons of the Jefferson line and a serious interference to the legitimate vehicle traffic on Jefferson Avenue. It also produces unsatisfactory conditions for the crowds going to and from the island itself. As at present arranged the unloading and loading of the Belle Isle traffic is effected at or near the foot of Grand Boulevard. Passengers alight at this point and pass by foot across the bridge to the island or use the motor buses, which, however, accommodate only a limited number.

The nature of this Belle Isle traffic is inherently different from that in other parts of the city. Habitual travelers whose daily affairs carry them to certain definite places readily acquire the habit of using apparently complicated arrangements. It is found possible, in such cases to pass through given areas, passageways or otherwise limited spaces, larger daily crowds in a short period, than would be possible with a holiday or transient crowd. The Belle Isle bridge traffic when heavy is essentially a holiday crowd, including women and children often encumbered with lunch baskets and other paraphernalia. Such a crowd to be handled with least confusion and with dispatch should have the simplest possible course to pursue, and when once loaded on cars should not be transferred until their destination is reached.

The distance from Jefferson Avenue to the Belle Isle end of the bridge is over half a mile, and in case of a sudden or threatened storm, or in extremely hot weather, this is a long distance for family parties to be obliged to walk. From this viewpoint the use of through cars over the bridge to the island is clearly indicated. In addition to the street car passengers alighting on Jefferson Avenue and the pedestrian crowds approaching from the nearby parts of the city, there is also an exceedingly heavy automobile traffic across the bridge. At times the movement of the automobile and pedestrian traffic to and from the island, conflicting with the east and west street car and automobile traffic on Jefferson Avenue, practically suspends the use of this important thoroughfare.

In view of the fact that Jefferson Avenue is the main east and west thoroughfare of Detroit and is in constant use 365 days in the year, any solution of the handling of the bridge traffic should be subordinated to the legitimate street traffic of Jefferson Avenue itself. The elements of conflict at present producing the congestion are principally the automobile traffic to and from the island and the large crowds of people surging across the street in their efforts to leave or board the cars strung along the Jefferson Avenue tracks.

Jefferson Avenue Bridge Approach

We propose, therefore, that a grade separation be arranged at this point for automobiles going to and coming from the island, and the removal of pedestrian congestion by the running of through cars to the island. This arrangement

contemplates the building of an underpass or tunnel, with a portal on Grand Boulevard just north of Jefferson Avenue for automobiles passing to and from the bridge. Car tracks should turn off at grade from Jefferson Avenue directly on to the bridge approach, connecting with both the east and west Jefferson Avenue tracks.

When the traffic is light, automobiles will turn off on to the bridge from Jefferson Avenue or Grand Boulevard, as at present, and the street cars routed to the island will also turn off at grade and pass over the bridge to a terminus on Belle Isle. On holidays, or whenever the crowd is heavy, the traffic regulations will require the automobiles for the island to turn north from Jefferson on some adjacent street so as to approach the bridge from Grand Boulevard. They will then pass under Jefferson Avenue through the underpass or subway to the bridge. Returning to the city they will pass through this same subway, thus avoiding entirely the surface traffic on Jefferson Avenue.

Belle Isle Bridge Terminus

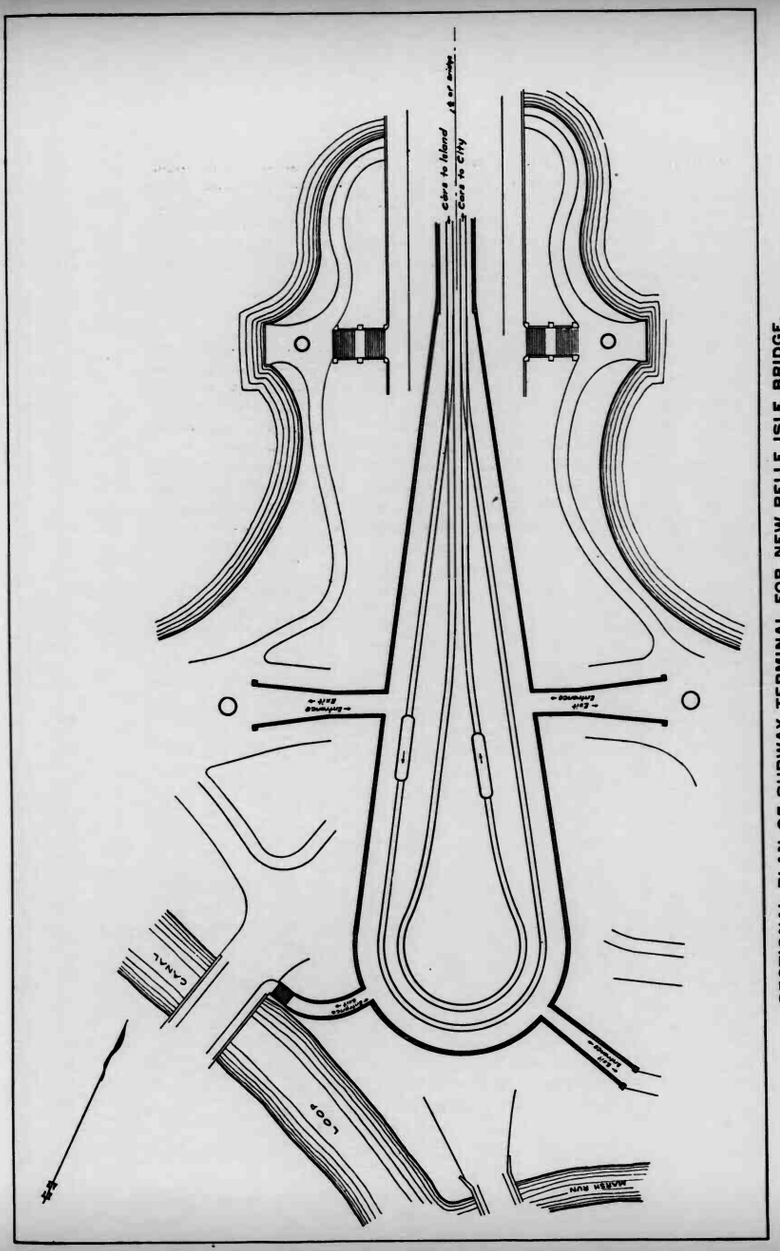
In reaching a decision to recommend carrying cars to Belle Isle over the bridge we have had clearly in mind the absolute necessity of doing so only in case we could combine this recommendation with a plan which would make the running of the cars upon the island unobjectionable from an artistic and scenic standpoint. Detroit is unique in the possession of an island park of exceptionally beautiful surroundings and natural attractions, and it would be a serious mistake to deface or injure in any way the appearance of this pleasure ground by ill-advised or disfiguring terminal plans.

We suggest the construction of the island end of the bridge with tracks descending from a point on the bridge several hundred feet from the present shore line. By carrying these tracks downward at a moderate grade the cars will pass entirely below the level of the bridge at the present shore line. On the island beyond this point the deck of the bridge, constituting the roadway, is to be maintained level for a sufficient distance to form a roof or top to a subway station. The tracks to the island will descend from the bridge into this subway and loop around, so as to pass loading and unloading platforms, and rise again on to the bridge.

This entire subway terminal can be constructed of concrete and steel and masked by banks of earth on each side, planted with grass and shrubbery in such a manner that the appearance of the island will be maintained practically as at present. The location selected does not disturb any of the forest trees on the island at this point. A slight elevation of only a few feet will be necessary of the broad plaza just south of the bridge approach from which the present roadways branch in various directions. This level may be kept approximately the same as the crown of the present small bridges passing over the canals, the bank around the subway station to be sloped off to the grade of the present lawns.

By this form of construction the cars will commence descending about 600 feet from the present shore line and be practically invisible from the island or river except on the portion of the bridge well out into the stream where they must be viewed only from a considerable distance.

Passengers reaching the island by the cars will alight and pass out through side openings of a tunnel form in various directions to the present paths and



SECTIONAL PLAN OF SUBWAY TERMINAL FOR NEW BELLE ISLE BRIDGE.

Showing a system of tracks and loading and unloading platforms below the park roadways. Entrances and exits arranged to connect with existing park paths, roadways and foot walks.

Note:—A full development of this terminal will be submitted as part of preliminary plans for a new bridge, which we have been engaged to prepare for the Park Commissioner of the City of Detroit to conform to his future plans for the development of the west end of Belle Isle.

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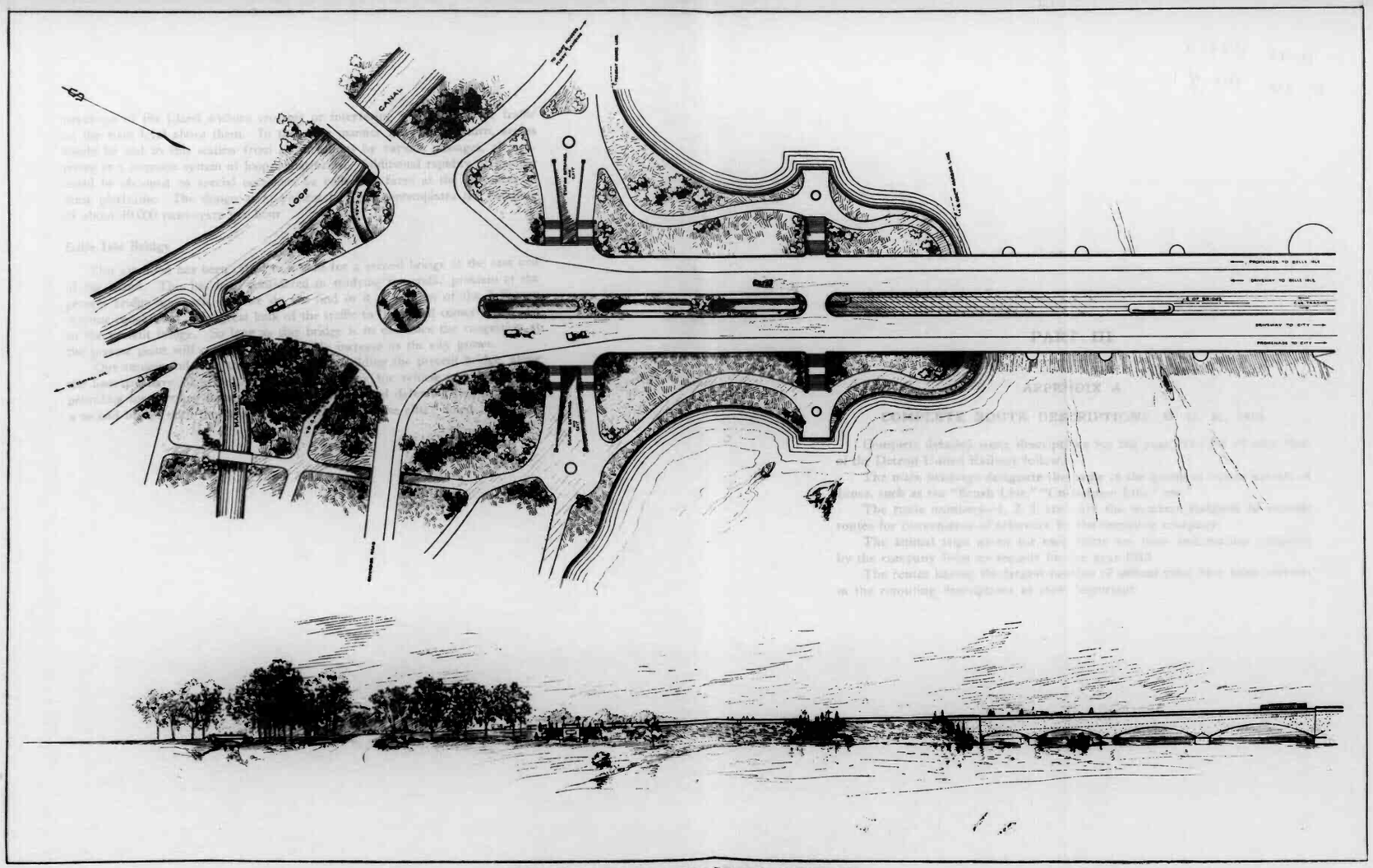
roadways of the island without crossing or interfering with the vehicle traffic on the road level above them. In the same manner loading to return, access would be had to this station from all directions by various passages, all centering in a common system of looped platforms. Additional rapidity of loading could be obtained on special occasions by collecting fares at the entrances to these platforms. The design as at present laid out contemplates the handling of about 40,000 passengers per hour.

Belle Isle Bridge

Our attention has been called to a plan for a second bridge at the east end of the island. This has been considered in studying the traffic problem at the present bridge approach, and we do not find in it a solution of the Jefferson Avenue congestion. The great bulk of the traffic to the island comes from west of the present bridge. So long as this bridge is in existence the congestion at the present point will continue and probably increase as the city grows.

Our recommendation, therefore, is for rebuilding the present bridge, along the lines we have suggested, of ample dimensions for vehicle and foot traffic, providing for carrying through cars to the island, and deferring the decision of a second bridge until the present one is rebuilt and the effect noted.



PLAN OF NEW BELLE ISLE BRIDGE APPROACH.

Providing for a subway terminal station for street cars. Parking here shown connects the new bridge roadways and foot walks and the entrances and exits of the subway station with existing park paths, roadways and foot walks.

Note:—A full development of this bridge approach will be submitted as part of preliminary plans for a new bridge, which we have been engaged to prepare for the Park Commissioner of the City of Detroit to conform to his future plans for the development of the west end of Belle Isle.

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PART III

APPENDIX A

COMPLETE ROUTE DESCRIPTIONS, D. U. R., 1913

Complete detailed route descriptions for the year 1913 for all city lines of the Detroit United Railway follow.

The main headings designate the name of the group of routes known as Lines, such as the "Brush Line," "Cross-town Line," etc.

The route numbers—1, 2, 3, etc.—are the numbers assigned to various routes for convenience of reference by the operating company.

The annual trips given for each route are from information compiled by the company from its records for the year 1913.

The routes having the largest number of annual trips have been selected in the rerouting descriptions as most important.

1913—BAKER LINE ROUTES

Route No. 1.—From Baker Car House Loop via Dix to 24th, to Baker, to Trumbull, to Abbott, to Michigan, to Monroe, to Randolph, to Gratiot, to Grandy, to Jos. Campau, to North Chene Loop; returning via Jos. Campau to Chene, to Gratiot, to Randolph, to Monroe, to Michigan, to Porter, to Brooklyn, to Baker, to 23rd, to Dix, to the Baker Car House Loop. **125,831 Annual Trips.**

Route No. 2.—From Baker Car House Loop via Dix to 24th, to Baker, to Trumbull, to Abbott, to Michigan, to Monroe, to Randolph, to Gratiot, to Chene Street "Y"; returning via Gratiot to Randolph, to Monroe, to Michigan, to Porter, to Brooklyn, to Baker, to 23rd, to Dix, to Baker Car House Loop. **440 Annual Trips.**

Route No. 3.—From Baker Car House Loop via Dix to 24th, to Baker, to Trumbull, to Abbott, to Michigan, to Woodward, to Jefferson; returning via Jefferson to Griswold, to Michigan, to Porter, to Brooklyn, to Baker, to 23rd, to Dix, to Baker Car House Loop. **144 Annual Trips.**

Route No. 4.—From Baker Car House Loop via Dix to 24th, to Baker, to Trumbull, to Abbott, to Michigan, to Griswold, to Jefferson, to Jefferson Car House Loop; returning via Jefferson to Griswold, to Michigan, to Porter, to Brooklyn, to Baker, to 23rd, to Dix, to Baker Car House Loop. **15 Annual Trips.**

Route No. 5.—From Baker Car House Loop via Dix to 24th, to Baker, to Trumbull, to Abbott, to Michigan, to Griswold, to Congress, to Woodward, to Woodward Car House Loop; returning via Woodward to Congress, to Griswold, to Michigan, to Porter, to Brooklyn, to Baker, to 23rd, to Dix, to Baker Car House Loop. **7 Annual Trips.**

Route No. 6.—From Chene and Charlevoix "Y" via Chene to Atwater, to Jos. Campau, to River; returning via Jos. Campau, to Atwater, to Chene, to Chene and Charlevoix "Y." **35 Annual Trips.**

Route No. 7.—From Jefferson Car House Loop via Jefferson to Griswold, to Grand River, to Cass "Y"; returning via Grand River to Griswold, to Jefferson, to Jefferson Car House Loop. **540 Annual Trips.**

Route No. 8.—From Baker Car House Loop via Dix to 24th, to Baker, to Trumbull, to Abbott, to Michigan, to Griswold, to Jefferson, to Field Avenue "Y"; returning via Jefferson to Concord, to Kercheval Car House "Y," thence east on Kercheval to Kercheval and Hurlbut "Y"; then returning to the Baker Car House via Kercheval to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to Michigan, to Porter, to Scotten, to Toledo, to Livernois, to Dix, to Baker Car House. **659 Annual Trips.**

Route No. 9.—From Baker Car House Loop via Dix to 24th, to Baker, to Trumbull, to Abbott, to Michigan, to Monroe, to Randolph, to Gratiot, to Grandy, to Jos. Campau, to Chene Loop; returning via Jos. Campau to Chene, to Gratiot, to Randolph, to Monroe, to Woodward, to Congress, to Griswold, to Fort, to Dearborn "Y"; returning via Fort, to Woodmere, to Chamberlain, to Springwells, to Ferndale, to Dix, to Baker Car House Loop. **1,232 Annual Trips.**

1913—BRUSH LINE ROUTES

Route No. 1.—From Harper "Y" on Russell Street, thence via Russell to Farnsworth, to St. Antoine, to Rowena, to Brush, to Gratiot, to Randolph, to Monroe, to

Woodward, to Atwater; returning via Brush to Jefferson, to Woodward, to Monroe, to Randolph, to Gratiot, to Brush, to Rowena, to St. Antoine, to Farnsworth, to Russell, to Harper "Y." **82,757 Annual Trips.**

Route No. 2.—From Harper "Y" on Russell Street via Russell to Farnsworth, to St. Antoine, to Rowena, to Brush, to Gratiot, to Randolph, to Monroe, to Michigan, to Trumbull Ave. "Y"; returning via Michigan, to Monroe, to Randolph, to Gratiot, to Brush, to Rowena, to St. Antoine, to Farnsworth, to Russell, to Harper "Y." **46 Annual Trips.**

Route No. 3.—From Michigan and Trumbull via Michigan, to Griswold, to Congress; returning via Congress to Woodward, to Michigan, to Michigan and Trumbull "Y." **86 Annual Trips.**

1913—CROSSTOWN LINE ROUTES

Route No. 1.—From Warren and 31st via Warren to Beaubien, to Forest, to Mt. Elliott, to Kercheval, to Concord, to Champlain, to Field, to Jefferson; returning via Jefferson to Concord, to Kercheval, to Mt. Elliott, to Forest, to 14th, to Warren, to 31st Street "Y." **134,058 Annual Trips.**

Route No. 2.—Same as No. 1, except continuing from Field and Jefferson via Jefferson to and from the Jefferson Car House. **13,189 Annual Trips.**

Route No. 3.—From Warren and 31st via Warren to Beaubien, to Forest, to Mt. Elliott "Y"; returning via Forest, to 14th, to Warren, to 31st Street "Y." **1,427 Annual Trips.**

Route No. 4.—From Warren and 31st via Warren to Beaubien, to Forest, to Mt. Elliott, to Harper, to Field Avenue "Y"; returning via Harper, to Mt. Elliott, to Forest, to 14th, to Warren, to 31st Street "Y." **2,515 Annual Trips.**

Route No. 5.—From Warren and 31st via Warren to Beaubien, to Forest, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Victor, to Brush, to Manchester, to John R.; returning via Victor to Oakland, to Bethune, to Beaubien, to Forest, to Mt. Elliott, to Harper, to Field Avenue "Y"; returning via Harper to Mt. Elliott, to Forest, to 14th, to Warren, to 31st Street "Y." **3,034 Annual Trips.**

Route No. 6.—From Warren Car House via Warren to 31st Street "Y"; returning via Warren to Warren Car House. **9,143 Annual Trips.**

Route No. 7.—From 14th and Warren via Warren to Beaubien, to Forest, to Mt. Elliott, to Kercheval, to Concord, to Champlain, to Field, to Jefferson; returning via Jefferson to Concord, to Kercheval, to Mt. Elliott, to Forest, to 14th, to 14th and Warren. **6,433 Annual Trips.**

Route No. 8.—From 14th and Warren via Warren to Beaubien, to Forest, to Mt. Elliott, to Harper "Y"; returning via Harper to Mt. Elliott, to Forest, to 14th, to 14th and Warren. **5,097 Annual Trips.**

Route No. 9.—From Bethune and Beaubien via Beaubien to Forest, to Mt. Elliott, to Kercheval, to Concord, to Champlain, to Field, to Jefferson; returning via Jefferson to Concord, to Kercheval, to Mt. Elliott, to Forest, to Hastings, to Piquette, to Beaubien, to Bethune Avenue "Y." **321 Annual Trips.**

Route No. 10.—From 14th and Warren via Warren to Beaubien, to Forest, to Hastings, to Piquette; returning via Beaubien to Forest, to 14th, to 14th and Warren. **188 Annual Trips.**

1913—FORT LINE ROUTES

Route No. 1.—From West Jefferson and the end of double track at River Rouge Bridge via Jefferson to Clark, to Fort, to Cadillac Square; returning around Cadillac Square to Fort, to Clark, to West Jefferson, to end of double track at River Rouge Bridge. **77,180 Annual Trips.**

Route No. 2.—From Fort and Dearborn via Fort to Cadillac Square, to Bates, to Champlain, to Baldwin Ave. "Y"; returning via Champlain to Field, to Jefferson, to Helen, to Champlain, to Elmwood, to Monroe, to Randolph, to Cadillac Square, to Fort and Dearborn "Y." **76,364 Annual Trips.**

Route No. 3.—From Clark Car House via Clark to Fort, to Dearborn "Y"; returning via Fort to Clark, to Clark Car House. **4,629 Annual Trips.**

Route No. 4.—From Clark Car House to West Jefferson, to River Rouge "Y"; returning via Jefferson to Clark, to Clark Car House. **7,969 Annual Trips.**

Route No. 5.—From Jefferson Car House Loop via Jefferson to Field and Jefferson; returning via Jefferson to the Jefferson Car House Loop. **8,859 Annual Trips.**

Route No. 6.—From Jefferson Car House via Jefferson to Helen, to Champlain, to Baldwin Ave. "Y"; returning via Champlain to Field, to Jefferson, to Jefferson Car House Loop. **1,229 Annual Trips.**

Route No. 7.—From Fort and Dearborn "Y" via Fort to Cadillac Square; returning via Fort to the Fort and Dearborn "Y." **10,955 Annual Trips.**

Route No. 8.—From Clark Car House via Clark to Fort, to Cadillac Square; returning via Cadillac Square to Fort, to Clark, to Clark Car House. **703 Annual Trips.**

Route No. 9.—From Fort and Clark via Clark to West Jefferson, to the River Rouge; returning via West Jefferson to Clark, to Clark and Fort "Y." **1,565 Annual Trips.**

Route No. 10.—From Fort and Clark via Fort and Cadillac Square to Bates, to Champlain, to Baldwin Ave. "Y"; returning via Champlain to Field, to Jefferson, to Helen, to Champlain, to Elmwood, to Monroe, to Randolph, to Cadillac Square, to Fort, to Clark and Fort "Y." **134 Annual Trips.**

Route No. 11.—From Field and Jefferson via Jefferson to Helen, to Champlain, to Elmwood, to Monroe, to Randolph, to Cadillac Square; returning via Cadillac Square to Bates, to Champlain, to Baldwin "Y"; returning via Champlain to Field, to Field and Jefferson. **55 Annual Trips.**

Route No. 12.—From Clark Car House via Clark to Fort "Y"; returning via Clark to Clark Car House. **175 Annual Trips.**

Route No. 13.—From Jefferson Car House Loop via Jefferson to Griswold, to Grand River, to Cass "Y"; returning via Grand River to Griswold, to Jefferson, to Jefferson Car House Loop. **311 Annual Trips.**

Route No. 14.—From Clark Car House via Clark to Fort, to Griswold, to Congress, to Woodward, to Michigan, to Trumbull "Y"; returning via Michigan, to Shelby, to Jefferson, to Griswold, to Fort, to Clark, to the Clark Car House. **131 Annual Trips.**

Route No. 15.—From Woodward Car House Loop via Woodward to Atwater "Y"; returning via Woodward to the Woodward Car House Loop. **12 Annual Trips.**

Route No. 16.—From Woodward and Jefferson via Jefferson to Griswold, to Michigan, to Porter, to Brooklyn, to Baker, to 23rd, to Dix, to the Baker Car House Loop; returning via Dix to 24th, to Baker, to Trumbull, to Abbott, to Michigan, to Woodward, to Woodward and Jefferson. **11 Annual Trips.**

1913—WYANDOTTE DIVISION ROUTES—IN DETROIT

Route No. 17.—From the Center of River Rouge Bridge via West Jefferson to Clark Avenue, to Fort, to Griswold, to Larned, to Shelby; returning via Jefferson to Griswold, to Fort, to Clark, to West Jefferson, to River Rouge Bridge. **15,705 Annual Trips.**

Route No. 18.—From the Center of River Rouge Bridge via West Jefferson to Clark, to Fort, to Cadillac Square; returning via Cadillac Square to Fort, to Clark, to West Jefferson, to River Rouge Bridge. **254 Annual Trips.**

1913—DETROIT, MONROE AND TOLEDO S. L. RY. ROUTES—IN DETROIT

Route No. 19.—From Fort and Dearborn via Fort to Griswold, to Larned, to Shelby; returning via Jefferson to Griswold, to Fort, to Fort and Dearborn. **11,186 Annual Trips.**

Route No. 20.—From Clark Avenue Car House via Clark to Fort, to Griswold, to Larned, to Shelby; returning via Jefferson, to Griswold, to Fort, to Clark, to Clark Car House. **3,016 Annual Trips.**

1913—FOURTEENTH LINE ROUTES

Route No. 1.—From Fourteenth and Milwaukee "Y" via Fourteenth to Locust, to Henry, to Clifford, to Griswold, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Woodland Avenue "Y"; returning via Oakland, to Bethune, to Beaubien, to Adams, to Witherell, to Broadway, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to Fourteenth, to Milwaukee "Y." **126,584 Annual Trips.**

Route No. 2.—From Milwaukee "Y" and Fourteenth Avenue via Fourteenth to Locust, to Henry, to Clifford, to Griswold, to State, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Woodland Avenue "Y"; returning via Oakland to Bethune, to Beaubien, to Adams, to Witherell, to Broadway, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to Fourteenth, to Milwaukee "Y." **4,129 Annual Trips.**

Route No. 3.—From Milwaukee "Y" and Fourteenth via Fourteenth to Locust, to Henry, to Clifford, to Griswold, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Clay, to Olney "Y"; returning via Clay to Oakland, to Bethune, to Beaubien, to Adams, to Witherell, to Broadway, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to Fourteenth, to Milwaukee "Y." **9,957 Annual Trips.**

Route No. 4.—From Warren Car House "Y" via Warren to Beaubien, to Forest, to Hastings, to "Y" at Forest and Hastings; thence via Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Woodland "Y"; returning via Oakland, to Bethune, to Beaubien, to Forest, to Fourteenth, to Warren, to Warren Car House "Y." **5,439 Annual Trips.**

Route No. 5.—From Warren Car House "Y" via Warren to Beaubien, to Forest, to Hastings, to "Y" at Hastings and Forest; thence via Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Clay, to Olney "Y"; returning via Clay to Oakland, to Bethune, to Beaubien, to Forest, to Fourteenth, to Warren, to Warren Car House. **4,213 Annual Trips.**

Route No. 6.—From Warren Car House "Y" via Warren to Fourteenth, to Milwaukee "Y"; returning via Fourteenth to Warren to Warren Car House "Y." **11,692 Annual Trips.**

Route No. 7.—From Warren Car House "Y" via Warren to Fourteenth "Y"; returning via Warren to Warren Car House. **33,712 Annual Trips.**

Route No. 8.—From Warren Car House "Y" via Warren, to Beaubien, to Forest, to Hastings "Y"; thence via Hastings to Piquette, to Beaubien, to Bethune "Y"; returning via Beaubien, to Forest, to Fourteenth, to Warren, to Warren Car House "Y." **2,602 Annual Trips.**

Route No. 9.—From Forest and Fourteenth via Fourteenth to Locust, to Henry, to Clifford, to Griswold, to State, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Forest, to Fourteenth. **50,828 Annual Trips.**

Route No. 10.—From Fourteenth and Warren via Warren to Beaubien, to Adams, to Witherell, to Broadway, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to Fourteenth, to Warren Avenue. **49,123 Annual Trips.**

Route No. 11.—From Milwaukee "Y" and Fourteenth via Fourteenth, to Locust, to Henry, to Clifford, to Griswold, to State, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Piquette, to Beaubien, to Bethune "Y"; returning via Beaubien to Adams, to Witherell, to Broadway, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to Fourteenth, to Milwaukee "Y." **4,298 Annual Trips.**

Route No. 12.—From Forest and Fourteenth via Fourteenth to Locust, to Henry, to Clifford, to Griswold, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Forest, to Fourteenth. **7,825 Annual Trips.**

Route No. 13.—From 31st Street "Y" and Warren via Warren to Fourteenth, to Locust, to Henry, to Clifford, to Griswold, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Clay, to Olney "Y"; returning via Clay, to Oakland, to Bethune, to Beaubien, to Adams, to Witherell, to Broadway, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to Fourteenth, to Warren, to 31st Street "Y." **3,621 Annual Trips.**

Route No. 14.—From 31st Street "Y" and Warren via Warren to Fourteenth, to Locust, to Henry, to Clifford, to Griswold, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Broadway, to Witherell, to Adams, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Victor, to Woodward, to Woodward Car House Loop; returning via Woodward to Victor, to Oakland, to Bethune, to Beaubien, to Adams, to Witherell, to Broadway, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to Fourteenth, to Warren, to 31st Street "Y." **1,762 Annual Trips.**

Route No. 15.—From Oakland and Clay via Clay to end of line; returning via Clay to Oakland. (Plug line, double end car.) **42,414 Annual Trips.**

1913—HAMILTON LINE ROUTES—IN DETROIT

Route No. 1.—From Woodward and Private right-of-way, west on private right-of-way to Metzger, to Oakman, to Webb, to Hamilton, to Greenwood, to Holden, to Third, to Ledyard, to Cass, to Grand River, to Woodward, to Woodward and Atwater "Y"; returning via Woodward to Grand River, to Greenwood, to Hamilton, to Webb, to Oakman, to Metzger, to private right-of-way, to Woodward. **29,441 Annual Trips.**

Route No. 2.—From Hamilton and Webb via Hamilton to Greenwood, to Holden, to Third, to Ledyard, to Cass, to Grand River, to Woodward, to Woodward and Atwater

"Y"; returning via Woodward to Grand River, to Greenwood, to Hamilton, to Webb Avenue "Y." **68,075 Annual Trips.**

Route No. 3.—From Pingree and Hamilton via Hamilton to Greenwood, to Holden, to Third, to Ledyard, to Cass, to Grand River, to Woodward, to Woodward and Atwater "Y"; returning via Woodward to Grand River, to Greenwood, to Hamilton, to the Pingree Avenue "Y." **28,257 Annual Trips.**

Route No. 4.—From Greenwood and Holden via Holden to Third, to Ledyard, to Cass, to Grand River, to Woodward, to Woodward and Atwater "Y"; returning via Woodward to Grand River, to Greenwood, to Holden. **875 Annual Trips.**

Route No. 5.—From Hamilton Car House Loop via Holden to Greenwood, to Hamilton, to Pingree "Y"; returning via Hamilton, to Greenwood, to Holden "Y," to Car House Loop. **2,835 Annual Trips.**

Route No. 6.—From Hamilton Car House Loop via Holden to Greenwood, to Hamilton, to Webb "Y"; returning via Hamilton to Greenwood, to Holden "Y," to Car House Loop. **3,988 Annual Trips.**

Route No. 7.—From Hamilton Car House Loop via Holden to Greenwood, to Hamilton, to Webb, to Oakman, to Metzger, to private right-of-way, to Woodward "Y"; returning via private right-of-way, to Metzger, to Oakman, to Webb, to Hamilton, to Holden, to Car House Loop. **261 Annual Trips.**

Route No. 8.—From Hamilton Car House Loop via Holden to Third, to Ledyard, to Cass, to Grand River, to Griswold, to Jefferson, to the Jefferson Car House Loop; returning via Jefferson to Griswold, to Grand River, to Greenwood, to Car House Loop. **39 Annual Trips.**

1913—HARPER LINE ROUTES

Route No. 1.—From Leesville Car House via Harper to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Macomb, to Gratiot, to State, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Harper, to the Leesville Car House. **13,685 Annual Trips.**

Route No. 2.—From Van Dyke and Harper via Harper to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Macomb, to Gratiot, to State, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Harper, to the Leesville Car House. **56,443 Annual Trips.**

Route No. 3.—From Leesville Car House via Harper to Mt. Elliott, to Forest, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Victor, to Brush, to Manchester, to John R., to Victor, to Oakland, to Bethune, to Beaubien, to Forest, to Mt. Elliott, to Harper, to Leesville Car House. **794 Annual Trips.**

Route No. 4.—From Van Dyke and Harper via Harper to Mt. Elliott, to Waterloo "Y"; returning via Mt. Elliott to Harper, to Van Dyke "Y." **19,053 Annual Trips.**

Route No. 5.—From Field and Harper via Harper to Mt. Elliott, to Waterloo "Y"; returning via Mt. Elliott to Harper, to Field Avenue "Y." **1,057 Annual Trips.**

Route No. 6.—From Harper and Field via Harper to Mt. Elliott, to Kercheval, to Concord, to Field, to Jefferson; returning via Jefferson to Concord, to Kercheval, to Mt. Elliott, to Harper, to Field "Y". **2,426 Annual Trips.**

Route No. 7.—From Leesville Car House via Harper to Mt. Elliott, to Hendricks, to Jos. Campau, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to

Michigan; returning via Michigan to Monroe, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Harper, to Leesville Car House. **1,603 Annual Trips.**

Route No. 8.—Same as No. 7, except turning at Van Dyke and Harper "Y" in place of Leesville Car House. **7,577 Annual Trips.**

Route No. 9.—From Kercheval Car House via Kercheval to Mt. Elliott, to Harper, to Van Dyke and Harper "Y"; returning via Harper to Mt. Elliott, to Kercheval, to Kercheval Car House. **369 Annual Trips.**

Route No. 10.—From Kercheval Car House via Kercheval to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to Michigan; returning via Michigan to Monroe, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Kercheval, to Kercheval Car House. **30 Annual Trips.**

1913—JEFFERSON LINE ROUTES

Route No. 1.—From Jefferson Car House Loop via Jefferson, to Griswold, to Grand River, to Grand River Loop; returning via Grand River to Griswold, to State, to Griswold, to Jefferson, to Jefferson Car House Loop. **72,973 Annual Trips.**

Route No. 2.—From "Y" at Jefferson and Alter Road via Jefferson to Griswold, to Grand River, to Grand River Loop; returning via Grand River to Griswold to State, to Griswold, to Jefferson, to "Y" at Alter Road. **88,205 Annual Trips.**

Route No. 3.—From Jefferson Car House Loop via Jefferson to Woodward, to Michigan, to Michigan and Griswold; returning via Griswold to Jefferson, to Jefferson Car House Loop. **8,101 Annual Trips.**

Route No. 4.—From Jefferson Car House Loop via Jefferson to Griswold, to Grand River, to Cass and Grand River "Y"; returning via Grand River to Griswold, to State, to Griswold, to Jefferson, to Jefferson Car House Loop. **18,383 Annual Trips.**

Route No. 5.—From Jefferson Car House Loop via Jefferson to Griswold, to Grand River, to Trumbull and Grand River "Y"; returning via Grand River to Griswold, to State, to Griswold, to Jefferson, to Jefferson Car House Loop. **5,902 Annual Trips.**

Route No. 6.—From Jefferson Car House via Jefferson to Field and Jefferson "Y"; returning via Jefferson to Jefferson Car House. **1,599 Annual Trips.**

Route No. 7.—From Jefferson Car House Loop via Jefferson to Griswold, to Grand River, to Myrtle, to Myrtle and 26th Street "Y"; returning via Myrtle to Grand River, to Griswold, to State, to Griswold, to Jefferson, to Jefferson Car House Loop. **2,591 Annual Trips.**

Route No. 8.—From Jefferson Car House Loop via Jefferson to Concord, to Kercheval, to Mt. Elliott, to Forest, to Fourteenth, to Warren, to Cross Over west of Grand River; thence via Warren, to Grand River, to Grand River Loop; returning via Grand River to Warren, to Cross Over west of Grand River, thence via Warren to Beaubien, to Forest, to Mt. Elliott, to Kercheval, to Concord, to Champlain, to Field, to Jefferson, to Jefferson Car House Loop. **2,112 Annual Trips.**

Route No. 9.—From Jefferson Car House Loop via Jefferson to Griswold, to Michigan, to Trumbull "Y"; returning via Michigan to Griswold, to Jefferson, to Jefferson Car House Loop. **40 Annual Trips.**

Route No. 10.—From Jefferson Car House Loop via Jefferson to Woodward, to Log Cabin Loop; returning via Woodward to Jefferson, to Jefferson Car House Loop. **7 Annual Trips.**

1913—SHORE LINE ROUTE—IN DETROIT

Route No. 11.—From Jefferson and the Alter Road via Jefferson to Bates, to Congress, to Griswold; returning via Griswold to Jefferson, to the Alter Road. **6,616½ Annual Trips.**

1913—ORCHARD LAKE ROUTES—IN DETROIT

Route No. 12.—From Grand River Loop via Grand River to Cass, to State, to Griswold, to Larned, to Shelby, to Jefferson; returning via Jefferson to Griswold, to Grand River, to the Grand River Loop. **10,880 Annual Trips.**

Route No. 13.—From Shelby and Jefferson via Jefferson to Griswold, to Grand River, to Trumbull, to Trumbull Car House; returning via Trumbull to Michigan, to Shelby, to Jefferson and Shelby. **123 Annual Trips.**

Route No. 14.—From Jefferson Car House Loop via Jefferson to Griswold; returning from Griswold and Jefferson via Jefferson to the Jefferson Car House Loop. **364 Annual Trips.**

1913—MICHIGAN LINE ROUTES

Route No. 1.—From Mack Avenue Loop via Mack Ave. to Gratiot, to Randolph, to Monroe, to Michigan, to the Michigan Car House Loop; returning via Michigan to Monroe, to Randolph, to Gratiot, to Mack Ave. Loop. **98,841 Annual Trips.**

Route No. 2.—From Leesville Car House Loop via Gratiot to Randolph, to Monroe, to Michigan, to Addison "Y"; returning via Michigan to Monroe, to Randolph, to Gratiot, to the Leesville Car House Loop. **39,258 Annual Trips.**

Route No. 3.—From Leesville Car House Loop via Gratiot to Randolph, to Monroe, to Michigan, to Michigan Car House Loop; returning via Michigan to Monroe, to Randolph, to Gratiot, to Leesville Car House Loop. **76,008 Annual Trips.**

Route No. 4.—From Mack Ave. Loop via Mack to Gratiot, to Randolph, to Monroe, to Woodward, to Woodward and Atwater "Y"; returning via Woodward to Monroe, to Randolph, to Gratiot, to Mack, to Mack Ave. Loop. **6,140 Annual Trips.**

Route No. 5.—From Mack Ave. Loop via Mack to Gratiot, to Chene "Y," thence via Gratiot to Leesville Car House Loop; returning from Leesville Car House Loop via Gratiot to Chene and Gratiot "Y," thence via Gratiot to Mack, to Mack Ave. Loop. **1,285 Annual Trips.**

Route No. 6.—From Chene and Gratiot east on Gratiot to Louisville Car House Loop; returning via Gratiot to Chene Street "Y." **1,022 Annual Trips.**

Route No. 7.—From Leesville Car House Loop to Randolph, to Monroe, to Woodward, to Woodward and Atwater "Y"; returning via Woodward to Monroe, to Randolph, to Gratiot, to Leesville Car House Loop. **6,756 Annual Trips.**

Route No. 8.—From Leesville Car House Loop via Gratiot to Randolph, to Monroe, to Trumbull and Michigan "Y"; returning via Michigan to Monroe, to Randolph, to Gratiot, to Leesville Car House Loop. **339 Annual Trips.**

Route No. 9.—From Michigan Car House Loop via Michigan to Griswold, to Jefferson, to Field and Jefferson "Y"; returning via Jefferson to Griswold, to Michigan, to Michigan Car House Loop. **1,273 Annual Trips.**

Route No. 10.—From Michigan Car House Loop via Michigan to Griswold, to Congress, to Woodward, to Michigan, to Michigan Car House Loop. **1,405 Annual Trips.**

Route No. 11.—From Michigan Car House Loop via Michigan to Woodward, to Woodward and Atwater "Y"; returning via Woodward to Michigan, to Michigan Car House Loop. **898 Annual Trips.**

Route No. 12.—From Michigan Car House Loop via Michigan to Trumbull "Y"; returning via Michigan to Michigan Car House Loop. **39 Annual Trips.**

Route No. 13.—From Woodward and Atwater "Y" via Woodward to the Woodward Car House Loop; returning via Woodward to Woodward and Atwater "Y." **1,168 Annual Trips.**

Route No. 14.—From Jos. Campau and Atwater via Atwater to Chene, to Gratiot Half "Y"; thence on Gratiot to Grandy, to Jos. Campau, to Loop; returning via Jos. Campau to Chene, to Atwater, to Jos. Campau. **374 Annual Trips.**

Route No. 15.—From Trumbull and Michigan via Michigan to Griswold, to Congress, to Woodward, to Michigan, to Trumbull and Michigan "Y." **2,108 Annual Trips.**

Route No. 16.—From Trumbull and Michigan via Michigan to Monroe, to Randolph, to Gratiot, to Chene "Y"; returning via Gratiot to Randolph, to Monroe, to Michigan, to Trumbull and Michigan "Y." **38 Annual Trips.**

Route No. 17.—From Jefferson Car House via Jefferson to Griswold, to Grand River, to Cass "Y"; returning via Grand River to Griswold, to Jefferson, to Jefferson Car House Loop. **295 Annual Trips.**

1913—DETROIT, JACKSON AND CHICAGO LINE ROUTE—IN DETROIT

Route No. 18.—From beginning of D. J. & C. Ry. on Michigan Avenue at Addison Switch; thence via Michigan Avenue to Griswold, to Larned, to Shelby; returning via Jefferson to Griswold, to Michigan, to beginning of D. J. & C. Ry. at Addison Switch. **16,219¼ Annual Trips.**

1913—RAPID RAILWAY LINE ROUTE—IN DETROIT

Route No. 19.—From beginning of Rapid Railway on Gratiot Avenue, thence via Gratiot, to Randolph, to Monroe, to Michigan, to Griswold, to Larned, to Shelby; returning via Jefferson to Griswold, to Michigan, to Monroe, to Randolph, to Gratiot, to beginning of Rapid Railway. **16,770 Annual Trips.**

1913—MYRTLE LINE ROUTES

Route No. 1.—From Roosevelt and Myrtle via Myrtle to Grand River, to Cass, to State, to Griswold, to Congress, to Mt. Elliott, to Jefferson, to Field Avenue "Y"; returning via Jefferson, to Mt. Elliott, to Fort, to Brush, to Congress, to Griswold, to Grand River, to Myrtle, to Roosevelt "Y." **60,307 Annual Trips.**

Route No. 2.—From Roosevelt "Y" and Myrtle via Myrtle to Grand River, to "Y" at Trumbull; thence via Trumbull to Trumbull Car House; returning via Trumbull, "Y" at Grand River on to Myrtle, thence via Myrtle to Roosevelt "Y." **2,692 Annual Trips.**

Route No. 3.—From Roosevelt "Y" and Myrtle via Myrtle, to Grand River, to Cass, to State, to Griswold, to Congress, to Mt. Elliott, to Jefferson, to Alter Road "Y"; returning via Jefferson to Mt. Elliott, to Fort, to Brush, to Congress, to Griswold, to Grand River, to Myrtle, to Roosevelt "Y." **1,139 Annual Trips.**

Route No. 4.—Same as No. 3, except loops at car house and returns instead of running through to Alter Road "Y." **5,230 Annual Trips.**

Route No. 5.—From Trumbull Car House via Trumbull, "Y" at Grand River, thence via Grand River, to Griswold, to State, to Griswold, to Jefferson, to Field Avenue "Y"; returning via Jefferson to Griswold, to Grand River, to Trumbull, to Trumbull Car House. **2,099 Annual Trips.**

Route No. 6.—From Trumbull and Grand River via Grand River to Griswold, to Jefferson, to Field Avenue "Y"; returning via Jefferson, to Griswold, to Grand River, to Grand River and Trumbull. **1,933 Annual Trips.**

Route No. 7.—From Trumbull and Grand River via Trumbull to Trumbull Car House; returning via Trumbull to Trumbull Car House. **248 Annual Trips.**

Route No. 8.—From Jefferson Car House via Jefferson to Alter Road "Y"; returning via Jefferson to Jefferson Car House. **30 Annual Trips.**

1913—NEW MICHIGAN CENTRAL DEPOT LINE ROUTES

Route No. 1.—From Marantette and 15th via Marantette to 14th, to Michigan, to Woodward, to Congress, to Griswold, to Michigan, to 14th, to Dalzelle, to 15th and Marantette. **950 Annual Trips.**

Route No. 2.—From Michigan Car House Loop via Michigan to 14th, to Dalzelle, to 15th, to Marantette, to 14th, to Michigan, to Michigan Car House Loop. **43 Annual Trips.**

1913—SHERMAN LINE ROUTES

Route No. 1.—From Dix and Livernois via Livernois to Toledo, to Scotten, to Porter, to 24th, to Howard, to 12th, to Abbott, to Cass, to State, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Kercheval, to Hurlbut "Y"; returning via Kercheval, to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Macomb, to Gratiot, to State, to Shelby, to Michigan, to Porter, to Scotten, to Toledo, to Livernois, to Dix and Livernois. **147,071 Annual Trips.**

Route No. 2.—From Dix and Livernois via Livernois to Toledo, to Scotten, to 24th, to Howard, to 12th, to Abbott, to Cass, to State, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Kercheval, to Concord, to Champlain, to Field, to Jefferson; returning via Jefferson to Concord, to Kercheval, to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Macomb, to Gratiot, to State, to Shelby, to Michigan, to Porter, to Scotten, to Toledo, to Livernois, to Dix and Livernois. **4,919 Annual Trips.**

Route No. 3.—From Kercheval Car House via Kercheval to Hurlbut "Y"; returning via Kercheval to Kercheval Car House. **15,142 Annual Trips.**

Route No. 4.—From Dix and Livernois via Livernois to Toledo, to Scotten, to 24th, to Howard, to Abbott, to Michigan, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to State, to Shelby, to Michigan, to Porter, to Scotten, to Toledo, to Livernois, to Dix and Livernois. **281 Annual Trips.**

Route No. 5.—From Kercheval Car House via Kercheval to Concord, to Champlain, to Field, to Jefferson; returning via Jefferson to Concord, to Kercheval Car House.
169 Annual Trips.

Route No. 6.—From Kercheval and Hurlbut via Kercheval to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Kercheval, to Hurlbut and Kercheval. **1,342 Annual Trips.**

Route No. 7.—From Kercheval and Hurlbut via Kercheval to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Michigan, to Porter, to 24th; returning via 24th to Howard, to Abbott, to Cass, to State, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Kercheval, to Kercheval and Hurlbut. **63 Annual Trips.**

Route No. 8.—From Field and Jefferson to Concord, to Kercheval, to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Kercheval, to Concord, to Champlain, to Field, to Field and Jefferson.
14 Annual Trips.

Route No. 9.—From Dix and Livernois via Dix to 24th, to Baker, to Trumbull, to Abbott, to Michigan, to Griswold, to Jefferson, to Field "Y"; turning via Jefferson to Concord, to Kercheval Car House "Y"; thence east on Kercheval to Hurlbut and Kercheval "Y"; returning via Kercheval to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to State, to Shelby, to Michigan, to Porter, to Scotten, to Toledo, to Livernois, to Dix and Livernois. **765 Annual Trips.**

Route No. 10.—From Kercheval Car House via Kercheval to Mt. Elliott, to Harper, to Field Avenue "Y"; returning via Harper to Mt. Elliott, to Kercheval, to the Kercheval Car House. **40 Annual Trips.**

Route No. 11.—From Waterloo and Mt. Elliott via Mt. Elliott to Harper, to Field Avenue "Y"; returning via Harper to Mt. Elliott, to Mt. Elliott and Waterloo "Y."
298 Annual Trips.

Route No. 12.—From Field and Harper via Harper to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Harper, to Field "Y." **4 Annual Trips.**

Route No. 13.—From Dix and Livernois via Livernois to Toledo, to Scotten, to 24th, to Howard, to Abbott, to Michigan, to Monroe, to Farmer, to Gratiot, to State, to Shelby, to Michigan, to Porter, to Scotten, to Toledo, to Livernois, to Dix and Livernois. **183 Annual Trips.**

Route No. 14.—From Kercheval and Hurlbut via Kercheval to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to Michigan, to Trumbull "Y"; returning via Michigan to Monroe, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Kercheval, to Kercheval and Hurlbut "Y." **25 Annual Trips.**

Route No. 15.—From Van Dyke to Harper via Harper to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to Michigan, to Monroe, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Harper, to the Van Dyke "Y."
20 Annual Trips.

Route No. 16.—From Jefferson Car House via Jefferson to Griswold, to Grand River, to Cass Avenue "Y"; returning via Grand River to Griswold, to Jefferson, to Jefferson Car House Loop. **77 Annual Trips.**

Route No. 17.—From Dix and Livernois via Livernois to Toledo, to Scotten, to 24th, to Howard, to Abbott, to Cass, to State, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo; returning via Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Michigan, to Porter, to Scotten, to Toledo, to Livernois, to Dix and Livernois.
59 Annual Trips.

Route No. 18.—From Van Dyke via Harper to Mt. Elliott, to Waterloo "Y"; returning via Mt. Elliott to Harper, to Van Dyke "Y." **107 Annual Trips.**

Route No. 19.—From Kercheval Car House via Concord to Champlain, to Field, to Jefferson, to Alter Road "Y"; returning via Jefferson to Woodward, to Michigan, to Griswold, to Jefferson, to Field "Y"; then returning via Jefferson and Concord to Kercheval Car House. **5 Annual Trips.**

Route No. 20.—From Kercheval Car House via Kercheval to Mt. Elliott, to Forest, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Victor, to Woodward, to the Woodward Car House Loop; returning via Woodward to Victor, to Oakland, to Bethune, to Beaubien, to Forest, to Mt. Elliott, to Kercheval, to Kercheval Car House.
902 Annual Trips.

Route No. 21.—From Kercheval and Hurlbut via Kercheval to Mt. Elliott, to Hendricks, to Jos. Campau, to Sherman, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to Woodbridge, to Bates, to Farmer, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Victor, to Brush, to Manchester; returning via John R. to Victor, to Oakland, to Bethune, to Beaubien, to Forest, to Mt. Elliott, to Kercheval, to the Hurlbut "Y."
40 Annual Trips.

Route No. 22.—From Mt. Elliott and Forest via Forest to Harper, to Field "Y"; returning via Harper to Mt. Elliott, to Mt. Elliott and Forest. **159 Annual Trips.**

Route No. 23.—From Kercheval Car House via Kercheval to Mt. Elliott, to Harper, to Van Dyke "Y"; returning via Harper to Mt. Elliott, to Kercheval, to Kercheval Car House. **5 Annual Trips.**

Route No. 24.—From Van Dyke and Harper via Harper to Mt. Elliott, to Hendricks, to Jos. Campau, to Hastings, to Clinton, to Brush, to Gratiot, to State, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Macomb, to Russell, to Catherine, to Jos. Campau, to Waterloo, to Mt. Elliott, to Harper, to Van Dyke "Y." **8 Annual Trips.**

Route No. 25.—From Kercheval Car House via Kercheval to Mt. Elliott, to Forest, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Victor, to Brush, to Manchester; returning via John R. to Victor, to Oakland, to Bethune, to Beaubien, to Forest, to Mt. Elliott, to Kercheval, to Kercheval Car House. **1,155 Annual Trips.**

1913—SPRINGWELLS LINE ROUTE

Route No. 1.—From Dix and Livernois via Dix to Ferndale, to Springwells, to Chamberlain, to Woodmere, to Fort, to Dearborn, to West Jefferson "Y"; returning via Dearborn to Fort, to Woodmere, to Chamberlain, to Springwells, to Ferndale, to Dix, to Dix and Livernois. **32,237 Annual Trips.**

1913—SOUTH CHENE LINE ROUTES

Route No. 1.—From Chene and Charlevoix "Y" via Chene to Atwater, to Jos. Campau, to the River; returning via Jos. Campau to Atwater, to Chene, to Chene and Charlevoix "Y." **37,986 Annual Trips.**

Route No. 2.—From Leesville and Gratiot via Gratiot to Chene, to Atwater, to Jos. Campau, to the River; returning via Jos. Campau to Atwater, to Chene, to Gratiot, to Leesville Car House. **4,722 Annual Trips.**

Route No. 3.—From Mack Avenue Loop via Mack to Gratiot, to Chene, to Atwater, to Jos. Campau, to the River; returning via Jos. Campau to Atwater, to Chene, to Gratiot, to Mack, to Mack Avenue Loop. **562 Annual Trips.**

Route No. 4.—From the North Chene Loop via Jos. Campau to Chene, to Atwater, to Jos. Campau, to the River; returning via Atwater to Chene, to Gratiot, to Grandy, to Jos. Campau, to the North Chene Loop. **3,685 Annual Trips.**

1913—THIRD STREET DEPOT LINE ROUTES

Route No. 1.—From Third and Grand River Avenues via Third to Larned, to Shelby; returning via Larned to Third to Grand River. **39,531 Annual Trips.**

Route No. 2.—From Jefferson Car House Loop via Jefferson to Third, to Grand River; returning via Third, to Jefferson, to Jefferson Car House. **730 Annual Trips.**

1913—TRUMBULL LINE ROUTES

Route No. 1.—From Trumbull Car House via Trumbull, to Michigan, to Griswold, to Woodbridge, to Bates; returning via Bates, to Congress, to Griswold, to Michigan, to Trumbull, to Trumbull Car House. **78,615 Annual Trips.**

Route No. 2.—From Trumbull Car House via Trumbull, to Michigan, to Griswold, to Jefferson, to Field "Y"; returning via Jefferson, to Griswold, to Michigan, to Trumbull, to Trumbull Car House. **1,034 Annual Trips.**

Route No. 3.—From Trumbull Car House via Trumbull to Michigan "Y"; returning via Trumbull to Trumbull Car House. **258 Annual Trips.**

Route No. 4.—From Trumbull Car House via Trumbull, to Michigan, to Woodward, to Congress; returning via Congress, to Griswold, to Michigan, to Trumbull, to Trumbull Car House. **505 Annual Trips.**

Route No. 5.—From Trumbull Car House via Trumbull, to Michigan, to Shelby, to Jefferson; returning via Jefferson, to Griswold, to Michigan, to Trumbull, to Trumbull Car House. **10,580 Annual Trips.**

Route No. 6.—From Trumbull Car House via Trumbull to Grand River; Half "Y" at Grand River, thence via Grand River, to Griswold, to State, to Griswold, to Jefferson, to Alter Road "Y"; returning via Jefferson, to Griswold, to Grand River, to Trumbull, to Trumbull Car House. **171 Annual Trips.**

Route No. 7.—Same as Route No. 6, except loop at Jefferson Car House instead of at Alter Road. **24 Annual Trips.**

Route No. 8.—Wye at Cass and Grand River, thence via Grand River to Griswold, to State, to Griswold, to Jefferson, to Jefferson Car House Loop; returning via Jefferson, to Griswold, to Grand River, to Cass Avenue. (Routes No. 6 and No. 7 is getting from the car house to this line.) **325 Annual Trips.**

Route No. 9.—From Trumbull Car House via Trumbull to Grand River, "Y" and return via Trumbull to Car House. **4 Annual Trips.**

Route No. 10.—From Grand River Loop via Grand River to Griswold, to State, to Griswold, to Woodbridge, to Bates; returning via Bates to Congress, to Griswold, to Grand River, to Loop. **3 Annual Trips.**

Route No. 11.—Beginning at Michigan and Griswold, thence via Griswold, to Jefferson, to Jefferson Car House Loop; returning via Jefferson to Woodward, to Michigan, to Michigan and Griswold. **2 Annual Trips.**

Route No. 12.—From Trumbull Car House via Trumbull, to Michigan, to Griswold, to Congress, to Woodward, to Woodward Car House Loop; returning via Woodward to Congress, to Griswold, to Michigan, to Trumbull, to Trumbull Car House. **10 Annual Trips.**

1913—VICTOR LINE ROUTES

Route No. 1.—From Woodward Car House Loop via Woodward to Victor, to Oakland, to Woodland Avenue "Y"; returning via Oakland, to Victor, to Woodward, to Woodward Car House Loop. **27,648 Annual Trips.**

1913—WARREN WEST ROUTES

Route No. 1.—From 31st and Warren via Warren to 14th, to Locust, to Henry, to Clifford, to Griswold, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Griswold, to Clifford, to Bagg, to 14th, to Warren, to 31st St. **28,272 Annual Trips.**

Route No. 2.—From 31st St. "Y" and Warren via Warren to 14th, to Locust, to Henry, to Clifford, to Griswold, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Woodland "Y"; returning via Oakland to Bethune, to Beaubien, to Adams, to Witherell, to Broadway, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to 14th, to Warren, to 31st St. "Y." **1,228 Annual Trips.**

Route No. 3.—From 31st St. "Y" and Warren via Warren to 14th, to Locust, to Henry, to Clifford, to Griswold, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to Broadway, to Witherell, to Adams, to Hastings, to Piquette, to Beaubien, to Bethune, to Oakland, to Clay, to Olney "Y"; returning via Clay to Oakland, to Bethune, to Beaubien, to Adams, to Witherell, to Broadway, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to 14th, to Warren, to 31st St. "Y." **1,228 Annual Trips.**

Route No. 4.—From Warren and 14th via 14th to Locust, to Henry, to Clifford, to Griswold, to Shelby, to Jefferson, to Griswold, to Woodbridge, to Bates, to Farmer, to Gratiot, to State, to Griswold, to Clifford, to Bagg, to 14th and Warren. **614 Annual Trips.**

Route No. 5.—Warren Car House via Warren to 31st St. "Y"; returning, via Warren to Warren Car House. **346 Annual Trips.**

1913—WOODWARD LINE ROUTES

Route No. 1.—From Log Cabin Loop via Woodward to Jefferson, to "Y" at Third and Jefferson; returning via Jefferson to Woodward to Log Cabin Loop.
177, 307 Annual Trips.

Route No. 2.—From Woodward Car House Loop via Woodward to Jefferson, to "Y" at Third and Jefferson; returning via Jefferson to Woodward, to Woodward Car House Loop. **89,314 Annual Trips.**

Route No. 3.—From Cortland Avenue "Y" via Woodward to Jefferson, to "Y" at Third and Jefferson; returning via Jefferson to Woodward, to Cortland Avenue "Y."
44,659 Annual Trips.

Route No. 4.—From Woodward Car House Loop via Woodward to Woodward and Atwater "Y"; returning via Woodward to Woodward Car House Loop.
26,991 Annual Trips.

Route No. 5.—From Cortland Avenue "Y" via Woodward to Woodward and Atwater "Y"; returning via Woodward to Cortland Avenue "Y." **5,565 Annual Trips.**

Route No. 6.—From Woodward Car House Loop via Woodward to Woodward and Elizabeth "Y"; returning via Woodward to Woodward Car House Loop.
4,007 Annual Trips.

Route No. 7.—From Woodward Car House via Woodward to Log Cabin Loop; returning via Woodward to Woodward Car House. **1,081 Annual Trips.**

Route No. 8.—From Log Cabin Loop via Woodward to Woodward and Atwater "Y"; returning via Woodward to Log Cabin Loop. **2,784 Annual Trips.**

1913—PONTIAC LINE ROUTES—IN DETROIT

Route No. 9.—From Log Cabin via Woodward, to Congress, to Griswold, to Larned, to Shelby, to Jefferson; returning via Jefferson to Griswold, to Congress, to Woodward, to Log Cabin. **22,033 Annual Trips.**

Route No. 10.—From Woodward Car House via Woodward to Congress, to Griswold, to Larned, to Shelby, to Jefferson; returning via Jefferson to Griswold, to Congress, to Woodward, to Woodward Car House. **289 Annual Trips.**

1913—FLINT LINE ROUTES—IN DETROIT

Route No. 11.—From Log Cabin Loop via Woodward to Congress, to Larned, to Shelby, to Jefferson; returning via Jefferson to Griswold, to Congress, to Woodward, to Log Cabin Loop. **12,539 Annual Trips.**

Route No. 12.—From Woodward Car House via Woodward to Congress, to Griswold, to Larned, to Shelby, to Jefferson; returning via Jefferson to Griswold, to Congress, to Woodward, to Woodward Car House Loop. **277 Annual Trips.**

APPENDIX B

SPECIAL WOODWARD AVENUE TRAFFIC COUNT

The traffic conditions on Woodward Avenue, as mentioned previously in this report, were found to be so different, both as to density, number of passengers handled per mile of line, and other characteristics, as to warrant a special and more detailed investigation. The following two tabular sheets give the results of the observations made on the north bound and south bound traffic.

The information contained in these tables was secured by the use of two observers on each car. The observer at the entrance door issued to each passenger a special slip, on which was designated the point at which he boarded the car. These slips were collected from each passenger as he left the car, and the point where he alighted noted. Other information, as to transfers, etc., was noted on these slips. In this manner a complete record was obtained of the individual trips of passengers. The total number of slips collected showed that 97% of the passengers recorded by the register had been observed.

As the investigation of this particular line was for the purpose of analysis for subway operation, the tabulation has been made by sections intended to cover districts that would be served by probable subway stations.

In these tables it will be noted:

A. That Woodward Avenue is divided into 19 districts from the river or depot to Log Cabin. These districts are less than ¼ mile in length south of Adams Avenue and about ½ mile in length north of Adams Avenue.

B. The figures in the left-hand column from 1 to 19 designate the districts in which passengers boarded the cars.

C. The figures in the horizontal line at the top of the page from 1 to 19 designate the districts in which passengers alighted from the cars.

D. The figures in the body of the table give the total passengers per annum boarding and alighting in each district prorated as per the traffic count from the total 1913 Woodward passengers as given by the Detroit United Railway.

E. The figures in the vertical column headed "Total" at the right of the page give the total number of passengers boarding in the district designated by the number at the left of the same horizontal line.

F. The figures in the corresponding percentage column give the percent that the above total figure bears to the total annual passengers.

G. The total figures in the horizontal line at the bottom of the table give the total number of passengers alighting in the district designated by the number at the top of the same vertical column.

H. The figures in the horizontal percentage line at the bottom of the page give the percent that the above totals bear to the total annual passengers.

I. The figures in the enclosed block in the table give the percent of total annual passengers riding various distances as derived from the detailed figures given in the table.

WOODWARD AVENUE LINE—NORTHBOUND

Distribution of total traffic for 1913, giving origin, destination and length of haul

DESCRIPTION OF SECTIONS			From Depot and River to and including Jefferson and Woodward	From Jefferson to and including Congress	From Congress to and including Fort	From Fort to and including State	From State to and including Grand River	From Grand River to and including Elizabeth	From Elizabeth to and including Watson	From Watson to and including Alexandrine	From Alexandrine to and including Forest	From Forest to and including Warren	From Warren to and including Hendrie	From Hendrie to and including Boulevard	From Boulevard to and including Melbourne	From Melbourne to and including Owen	From Owen to and including Harmon	From Harmon to and including Massachusetts	From Massachusetts to and including Buena Vista	From Buena Vista to and including Railroad	From Railroad to and including Log Cabin	A	B
			TO SECTION																			TOTAL	PER CENT
			1	2	3	4	5	6 C	7	8 D	9	10	11 E	12	13 F	14	15 G	16	17 H	18 K	19		
From Depot and River to and incl. Jefferson & Woodward	FROM SECTION	1	226,692	100,294	261,039	204,710	94,798	104,416	136,015	90,677	78,312	49,460	42,590	123,650	56,329	71,442	56,329	38,469	61,825	252,796	60,526	2,110,369	9.2
From Jefferson to and including Congress		2		1,374	20,608	54,956	67,321	112,659	184,101	177,232	120,902	82,433	81,060	188,223	90,677	82,433	67,321	63,199	71,442	318,742	107,163	1,891,846	8.2
From Congress to and including Fort		3			1,374	30,226	98,920	212,953	266,535	332,481	251,422	131,893	204,710	411,784	164,867	171,736	123,650	141,511	125,024	491,853	149,754	3,320,693	14.4
From Fort to and including State		4					20,608	149,754	454,758	483,609	377,820	211,579	206,083	386,063	240,431	204,710	166,238	179,980	122,276	350,342	145,632	3,699,883	16.0
From State to and including Grand River		5						37,095	188,223	234,935	193,718	140,137	120,902	195,092	122,276	109,911	83,807	94,798	96,172	147,006	72,816	1,536,888	8.0
From Grand River to and including Elizabeth		6						2,748	96,172	138,763	182,727	107,163	72,816	163,493	86,555	81,060	59,077	59,077	48,086	166,241	35,721	1,299,699	5.6
From Elizabeth to and including Watson		7							23,356	75,181	159,980	137,997	79,686	136,623	82,051	86,555	86,172	45,338	53,582	143,493	49,460	1,269,474	5.5
From Watson to and including Alexandrine		8								1,374	134,641	138,763	83,807	126,398	82,433	71,442	50,834	30,226	30,226	160,745	42,590	953,479	4.1
From Alexandrine to and including Forest		9									48,086	85,181	155,249	406,671	186,849	148,380	173,110	122,276	126,398	798,230	159,371	2,409,801	10.5
From Forest to and including Warren		10										1,374	133,267	280,273	215,700	193,718	185,475	129,146	131,893	405,297	108,537	1,784,680	7.7
From Warren to and including Hendrie		11											10,991	32,973	42,590	48,086	48,086	45,338	37,095	70,068	27,478	362,705	1.6
From Hendrie to and including Boulevard		12												5,496	39,843	65,947	81,060	64,573	65,947	157,997	90,677	571,540	2.5
From Boulevard to and including Melbourne		13													1,374	47,095	101,059	58,086	49,843	40,226	38,926	336,609	1.5
From Melbourne to and including Owen		14														1,374	32,973	30,226	39,843	75,564	16,487	196,467	0.9
From Owen to and including Harmon		15															4,122	34,347	46,712	107,163	27,478	219,822	1.0
From Harmon to and including Massachusetts		16																2,748	15,113	79,686	61,825	159,372	0.7
From Massachusetts to and including Buena Vista		17																	1,374	98,920	87,929	188,223	0.8
From Buena Vista to and including Railroad		18																		27,478	391,559	419,037	1.8
From Railroad to and including Log Cabin		19																			6,869	6,869	0
M		TOTAL	226,692	101,668	283,021	289,892	281,647	619,625	1,349,160	1,534,252	1,647,608	1,085,980	1,201,161	2,456,739	1,411,975	1,383,889	1,319,313	1,139,338	1,122,851	3,891,847	1,680,798	23,037,456	100
N		PER CENT	1.0	0.4	1.2	1.3	1.2	2.7	5.9	6.7	6.8	4.8	5.2	10.7	6.2	6.0	5.7	4.9	4.8	17.2	7.3	100	

1.4% of total number of passengers ride over 6½ miles
5.7% " " " " " " 6 to 6½ "
7.3% " " " " " " 5 to 6 "
13.1% " " " " " " 4 to 5 "
13.2% " " " " " " 3 to 4 "
16.4% " " " " " " 2 to 3 "
25.1% " " " " " " 1 to 2 "
17.8% " " " " " " less than 1 mile
Average Haul 2.79 miles

EXPLANATION: Totals in column "A" give the number of passengers per annum loading in sections 1, 2, 3, etc., prorated from the annual total northbound traffic for 1913, on basis of counts made in November, 1914. The figures in column "B" give the same information expressed in per cent. of the annual total northbound traffic. The figures in each horizontal line give the number of passengers per annum, originating in the section designated by the number in the extreme left-hand column, who unload in the section designated by the number at the top of the column containing the figure in question. Totals in horizontal line "M" give the total number of passengers per annum unloading in the different sections. The figures in horizontal line "N" at the bottom of the table give the same information expressed in per cent. of the annual total northbound traffic.

Figures to the left of the heavy line "C-C" give the number of passengers riding a distance less than one mile.

Figures between heavy lines "C-C" and "D-D" give the number of passengers riding a distance between one and two miles.

Figures between heavy lines "D-D" and "E-E" give the number of passengers riding a distance between 2 and 3 miles.

Figures between heavy lines "E-E" and "F-F" give the number of passengers riding a distance between 3 and 4 miles.

Figures between heavy lines "F-F" and "G-G" give the number of passengers riding a distance between 4 and 5 miles.

Figures between heavy lines "G-G" and "H-H" give the number of passengers riding a distance between 5 and 6 miles.

Figures between heavy lines "H-H" and "K-K" give the number of passengers riding a distance between 6 and 6½ miles.

Figures to the right of the heavy line "K-K" give the number of passengers riding a distance greater than 6½ miles.

WOODWARD AVENUE LINE—SOUTHBOUND

Distribution of total traffic for 1913, giving origin, destination and haul

DESCRIPTION OF SECTIONS			From Depot and River to and including Jefferson and Woodward	From Jefferson to and including Congress	From Congress to and including Fort	From Fort to and including State	From State to and including Grand River	From Grand River to and including Elizabeth	From Elizabeth to and including Watson	From Watson to and including Alexandrine	From Alexandrine to and including Forest	From Forest to and including Warren	From Warren to and including Hendrie	From Hendrie to and including Boulevard	From Boulevard to and including Melbourne	From Melbourne to and including Owen	From Owen to and including Harmon	From Harmon to and including Massachusetts	From Massachusetts to and including Buena Vista	From Buena Vista to and including Railroad	From Railroad to and including Log Cabin	A	B
			TO SECTION																				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	TOTAL	PER CENT
From Depot and River to and incl. Jefferson & Woodward	FROM SECTION	1	152,182																			152,182	.7
From Jefferson to and including Congress		2	118,932	1,279																		120,211	.5
From Congress to and including Fort		3	81,846	2,558																		84,404	.4
From Fort to and including State		4	370,864	89,519	5,115	3,837																469,335	2.0
From State to and including Grand River		5	101,028	69,057	31,971	15,346																217,402	.9
From Grand River to and including Elizabeth		6	74,173	111,259	79,288	226,355	34,529	3,837														529,441	2.3
From Elizabeth to and including Watson		7	53,711	147,067	98,471	468,055	207,172	157,297	10,231													1,142,004	5.0
From Watson to and including Alexandrine		8	39,644	159,855	140,672	570,363	272,393	308,200	95,913	6,394												1,593,434	6.9
From Alexandrine to and including Forest		9	30,662	84,403	115,096	433,527	218,682	242,980	83,125	42,202	2,588											1,253,265	5.4
From Forest to and including Warren		10	35,808	107,423	92,076	241,701	140,663	190,547	122,769	136,836	60,105	2,558										1,130,486	4.9
From Warren to and including Hendrie		11	37,086	140,672	104,865	346,566	189,268	249,374	185,432	170,086	150,903	88,240	62,663									1,725,155	7.5
From Hendrie to and including Boulevard		12	44,759	106,144	162,413	574,199	231,470	274,957	130,442	63,942	112,538	258,338	214,845	6,394								2,180,441	9.5
From Boulevard to and including Melbourne		13	31,971	121,490	98,471	378,537	207,172	219,960	102,307	62,663	67,779	172,643	157,297	47,317	3,837							1,671,444	7.3
From Melbourne to and including Owen		14	20,461	95,913	71,615	264,720	122,769	190,547	116,374	60,105	51,154	136,836	121,490	76,730	39,644	2,558						1,370,916	6.0
From Owen to and including Harmon		15	14,067	90,798	69,057	241,700	131,721	175,201	63,942	48,596	52,432	98,471	139,394	44,759	70,336	33,250	1,279					1,275,003	5.5
From Harmon to and including Massachusetts		16	28,134	60,105	76,730	230,191	121,490	167,528	52,432	37,086	39,644	94,634	122,769	62,663	67,779	39,644	23,019	5,115				1,228,963	5.3
From Massachusetts to and including Buena Vista		17	15,346	31,971	35,808	157,297	99,749	84,403	44,759	24,298	24,298	89,519	93,355	42,208	39,644	21,740	43,471	11,943	1,279			861,088	3.7
From Buena Vista to and including Railroad		18	60,105	212,287	191,826	886,236	345,287	363,191	193,104	81,846	78,009	502,584	749,400	172,643	139,394	80,567	115,095	95,913	93,355	69,057		4,429,899	19.2
From Railroad to and including Log Cabin		19	12,788	72,894	42,202	231,470	149,624	109,980	60,105	23,019	16,625	109,980	158,576	53,711	38,365	29,413	43,480	37,086	80,567	324,825	7,673	1,602,383	7.0
M		TOTAL	1,323,567	1,704,694	1,415,676	5,270,100	2,471,989	2,738,002	1,260,935	757,073	656,075	1,553,803	1,819,789	506,425	398,999	207,172	226,344	150,057	175,201	393,882	7,673	23,037,456	100.0
N		PER CENT	5.7	7.4	6.1	22.9	10.7	11.9	5.5	3.3	2.9	6.7	7.9	2.2	1.7	0.9	1.0	0.7	0.8	1.7	0.0	100.0	

0.6% of total number of passengers ride over 6½ miles
4.1% " " " " " 6 to 6½ "
10.7% " " " " " 5 to 6 "
10.9% " " " " " 4 to 5 "
15.5% " " " " " 3 to 4 "
17.4% " " " " " 2 to 3 "
23.7% " " " " " 1 to 2 "
17.1% " " " " " less than 1 mile
Average Haul 2.8 miles

EXPLANATION: Totals in column "A" give the number of passengers per annum, loading in sections 19, 18, 17, etc., prorated from the annual total southbound traffic for 1913, on basis of counts made in November, 1914. The figures in column "B" give the same information expressed in per cent. of the annual total southbound traffic. The figures in each horizontal line give the number of passengers per annum, originating in the sections designated by the number in the extreme left-hand column, who unload in the section designated by the number at the top of the column containing the figure in question. Totals in horizontal line "M" give the total number of passengers per annum unloading in the different sections. The figures in horizontal line "N" at the bottom of the table give the same information expressed in per cent. of the annual total southbound traffic.

Figures to the right of the heavy line "C-C" give the number of passengers riding a distance less than one mile.

Figures between heavy lines "C-C" and "D-D" give the number of passengers riding a distance between 1 and 2 miles.

Figures between heavy lines "D-D" and "E-E" give the number of passengers riding a distance between 2 and 3 miles.

Figures between heavy lines "E-E" and "F-F" give the number of passengers riding a distance between 3 and 4 miles.

Figures between heavy lines "F-F" and "G-G" give the number of passengers riding a distance between 4 and 5 miles.

Figures between heavy lines "G-G" and "H-H" give the number of passengers riding a distance between 5 and 6 miles.

Figures between heavy lines "H-H" and "K-K" give the number of passengers riding a distance between 6 and 6½ miles.

Figures to the left of the heavy line "K-K" give the number of passengers riding a distance greater than 6½ miles.

APPENDIX C

TRAFFIC COUNTS ON EXISTING LINES OF DETROIT STREET RAILWAY

Period—August 1st to December 15, 1914

The following statistics were compiled from observations made by men riding on the cars over all the lines of the city.

The riding in general was confined to:

A. Weeks days.
B. Days of average weather conditions.
C. Days free from special conditions, such as the State Fair, G. A. R. reunion, etc.

The observations were carried on each day from 5:30 A. M., to 12:00 midnight, divided into 4 periods:

1st period—5:30 A.M. to 9:00 A.M.
2nd period—9:00 A.M. to 4:00 P.M.
3rd period—4:00 P.M. to 6:00 P.M.
4th period—6:00 P.M. to 12:00 midnight.

The number of cars ridden varied from 20% to 75% of all the cars scheduled for an average week day.

The checking was divided into 2 classes:

1. Through riding, consisting of counts over all the lines from terminus to terminus.
2. Short riding, consisting of counts over the principal lines through the congested district, bounded by the river and Adams Avenue and by Abbott and Brush Streets.

In the following tables under the general heading "Traffic count for full length of line," are given the results of the observations Class 1 for each line. In these tables it will be noted:

A. The figures in the columns headed "On" and "Off" in each period are the passengers actually counted.
B. The figures in the columns headed "On" and "Off" under the general heading "Total" are the sum of the figures for the various periods.
C. Figures in columns headed "Average per Car" are the passengers counted, divided by the number of cars observed.
D. The figures in the column headed "Time" are the minutes and fractions of minutes between time points as noted by observers.

E. The figures in the column headed "On" and "Off" under the general heading "Annual passengers 1913 prorated as per count" are the total passengers carried by the line for the year 1913 as given by the Detroit United Railway, divided equally in each direction and prorated as boarding and alighting in the same proportion as the total passengers observed. This does not take account of the seasonal changes.

In the following tables under the general heading "Traffic count in congested district" are given the results of the observations Class 2 for each line. In these tables it will be noted:

A. The figures designated "Initial" give the passengers counted on board the cars when entering the district under observation, and figures designated "Final" give the number of passengers counted on board the cars when leaving the district under observation.
B. In other respects the figures in these tables are presented in the same manner as in the previous tables. In the tables under the general heading "Summary of Traffic Counts" are given the total cars scheduled for an average week day, the cars observed and the percent of scheduled cars observed for each of the four periods and for the whole day.

The results of the observations given in the above described tables are presented in graphic form for each line, these diagrams being placed in Part II. These diagrams show for each line:

A. The annual passengers 1913 loading and unloading at each street stop.
B. The average passengers loading at each street on the cars observed.
C. The maximum passengers loading on the most crowded cars observed.

In addition to the above described observations a large number of special counts were made, for example:

1. Timing of cars through congested district.
2. Stop-watch observations of running and loading time of cars at various points within the congested district.
3. Counts of vehicle traffic in congested district.
4. Counts of vehicle traffic on Belle Isle bridge.
5. Counts of automobile parking in congested district.
6. Counts of number of cars and their loading, entering and leaving congested district.
7. Street corner counts at various points in the city showing car loading, number of cars passing, etc.
8. Counts of passengers transferring in congested district and at other important transfer points.

BAKER LINE—WESTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off		Prorated as per Count	
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Rus. Wh. & Found.	108	0		438	0		192	0		183	0		921	10.46	0	0	1,153,000	0
Amer. Rad. Co...	30	0		46	0		80	0		21	0		177	2.01	0	0	221,300	0
Pallister	25	0		123	1		197	1		45	0		390	4.43	2	.02	487,800	2,500
Smith	15	1		96	0		63	0		23	0		197	2.24	1	.01	246,500	1,251
Newton	12	0		65	0		96	0		28	0		201	2.28	0	0	251,500	0
Finley	5	0		20	1		17	0		21	0		63	.71	1	.01	78,800	1,251
Pollard	8	0		14	0		21	0		2	0		45	.51	0	0	56,350	0
No. Gr. Blvd. E.	7	1	3.4	86	2	3.41	41	1	4.31	42	1	3.16	176	2.00	5	.06	220,000	6,255
Milwaukee	22	0		97	3		24	1		83	3		226	2.57	7	.08	282,800	8,750
Trombley	30	0		73	8		17	0		43	2		163	1.85	10	.11	204,000	12,510
Piquette	23	0		64	2		12	1		23	2		122	1.38	5	.06	152,600	6,255
Harper	23	1		51	6		10	1		51	7		135	1.53	15	.17	168,800	18,760
Medbury	20	1		46	4		6	0		43	8		115	1.31	13	.15	143,900	16,250
Hendrie	13	0		58	6		8	4		29	4		108	1.23	14	.16	135,100	17,500
Palmer	13	0		36	5		8	3		27	6		84	.95	14	.16	105,100	17,500
Ferry	19	0		58	4		15	5		52	6		144	1.64	15	.17	180,100	18,760
Kirby	26	0		45	0		2	3		13	7		86	.98	10	.11	107,600	12,510
Frederick	14	1		41	9		18	0		33	9		106	1.20	19	.22	132,600	23,760
Farnsworth	10	1		24	6		2	7		13	3		49	.56	17	.19	61,350	21,260
Theodore	3	2		35	3		7	17		11	6		56	.64	28	.32	70,100	35,000
Warren	3	2		26	8		4	8		17	6		50	.57	24	.27	62,600	30,000
Hancock	3	0		18	5		5	11		7	1		33	.37	17	.19	41,600	21,260
Forest	75	108	6.6	142	395	6.79	157	234	5.61	90	242	6.96	464	5.27	979	11.13	580,728	1,226,557
Garfield	5	0		20	6		2	7		6	6		33	.37	19	.22	41,600	23,760
Canfield	14	7		39	16		8	6		25	6		86	.98	35	.40	107,600	43,800
Willis	9	1		24	10		0	7		11	6		44	.50	24	.27	55,100	30,000
Superior	10	1		17	15		3	20		11	17		41	.46	53	.60	51,350	66,300
Alexandrine	11	1		22	12		4	13		11	14		48	.55	40	.45	60,100	50,000
Leland	18	5		13	13		6	11		11	14		48	.55	43	.49	60,100	53,800
Illinois	7	2		25	18		2	17		11	9		45	.51	46	.52	56,350	57,500

BAKER LINE—WESTBOUND—Continued

St. Joseph	16	3		17	14		2	11		10	14		45	.51	42	.48	56,350	52,500
Mack	8	2		28	7		2	17		13	12		51	.58	38	.43	63,800	47,500
Hale	9	0		37	10		2	8		7	6		55	.62	24	.27	68,800	30,000
Scott	10	2		7	5		0	13		5	3		22	.25	23	.26	27,500	28,800
Pierce	3	1		3	5		0	6		3	4		9	.10	16	.18	11,260	20,000
Erskine	1	1		8	22		1	11		5	14		15	.17	48	.54	18,760	60,000
Watson	0	4	5.3	14	11	4.74	2	10	9.77	8	17	5.12	24	.27	42	.48	30,000	52,500
Gratiot	27	71		43	171		18	217		32	93		120	1.36	552	6.28	150,100	691,000
Brewster	0	1		10	5		1	1		4	7		15	.17	14	.16	18,760	17,500
Dubois	9	8		14	11		5	3		12	2		40	.45	24	.27	50,000	30,000
St. Aubin	15	4		32	7		6	9		10	5		63	.72	25	.28	78,800	31,500
Adelaide	0	1		5	3		2	2		3	6		10	.11	12	.13	12,510	15,000
Trolley Sta.	3	3		34	12		2	2		0	8		39	.44	25	.28	48,800	31,500
Orleans	11	3	4.0	23	12	3.7	14	6	4.19	15	7	4.08	63	.72	28	.32	78,800	35,000
Riopelle	11	18		33	13		12	14		4	6		60	.68	51	.58	75,100	63,800
Russell	4	4		34	22		7	9		15	18		60	.68	53	.60	75,100	66,300
Rivard	2	2		25	15		5	22		10	5		42	.48	44	.50	52,550	55,000
Trolley Sta.	1	0		0	3		0	0		0	2		1	.01	5	.06	1,251	6,250
Maple	0	3		14	11		0	4		2	1		16	.18	19	.22	20,000	23,750
Hastings	13	12		34	40		10	26		22	24		79	.90	102	1.16	98,800	128,000
Trolley Sta.	0	1		4	5		3	4		1	1		8	.09	11	.12	10,000	13,750
Antoine	1	6		21	21		7	16		20	6		49	.56	49	.55	61,300	61,300
Raynor	0	8		5	16		7	1		5	1		17	.19	26	.29	21,280	32,500
Beaubien	0	2		15	11		4	14		7	5		26	.29	32	.36	32,500	40,000
Brush	5	7		26	42		11	5		12	14		54	.61	68	.77	67,600	85,000
Randolph	1	5		14	52		11	16		24	28		50	.57	101	1.15	62,500	126,800
Macomb	5	70		63	162		44	18		19	37		131	1.49	287	3.26	163,900	359,000
Monroe	3	15		6	45		6	15		16	34		31	.35	109	1.24	38,800	136,390
Library	0	7		22	41		15	4		16	18		53	.60	70	.80	66,300	87,500
Farmer	2	21		83	113		48	14		43	22		176	2.00	170	1.93	220,000	213,000
Opera House	1	1		23	25		22	41		43	36		89	1.01	103	1.17	111,300	128,900
Woodward	21	123	7.7	189	354	8.57	127	70	4.92	122	123	7.84	459	5.22	670	7.62	574,000	839,000
Griswold	57	60		328	264		181	48		233	107		799	9.08	479	5.44	1,002,000	599,275
Shelby	10	17		85	27		72	9		68	10		235	2.67	63	.72	294,000	78,800
Trolley Sta.	0	0		11	5		12	1		6	1		29	.33	7	.08	36,300	8,750

BAKER LINE—WESTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Washington B...	2	12		15	19		26	3		13	13		56	.64	47	.53	70,000	58,800
Park	0	29		51	30		26	13		34	9		111	1.26	81	.92	138,950	101,500
Abbott	4	3		6	4		9	2		9	2		28	.32	11	.12	35,000	13,750
First	0	6		14	2		7	3		5	5		26	.29	16	.18	32,500	20,000
Porter	8	3	4.3	20	14	4.08	1	6	6.15	8	8	4.21	37	.42	31	.35	46,300	38,800
Second	1	1		4	4		2	6		4	2		11	.12	13	.15	13,860	16,250
Third	4	11		25	22		17	6		21	8		67	.76	47	.53	83,961	58,800
Fourth	4	4		7	5		1	6		1	5		13	.15	20	.23	16,360	25,000
Fifth	0	6		4	15		0	6		4	3		8	.09	30	.34	10,200	37,500
Sixth	1	2		4	14		1	5		1	15		7	.08	36	.41	8,760	45,201
Brooklyn	5	7		9	24		7	20		3	29		24	.27	80	.91	30,200	100,800
Labrosse	0	1		3	7		0	12		0	8		3	.03	28	.32	3,750	35,000
Baker	1	1		4	11		2	6		4	5		11	.12	23	.26	13,860	28,800
Eighth	0	0		1	12		0	0		1	3		2	.02	15	.17	2,590	18,760
Trumbull	4	4	3.6	5	29	2.92	5	14	4.12	1	22	4.09	15	.17	69	.78	18,860	86,300
Left on car*		153			992			639			691				2,475	28.15		3,096,225
Tota'ls			34.90			34.21			39.07			35.46	7,910		7,910		9,900,400	9,900,400

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	1,980	0		1,941	0		599	0		4,520	39.39	0	0
Broadway	30	253		61	230		47	25		138	1.2	508	4.42
Randolph	10	122		20	96		11	17		41	.36	235	2.04
Library	3	32		27	62		19	6		49	.43	100	.87
Farmer	20	93		87	180		65	23		172	1.5	296	2.57
Woodward	93	678		251	513		214	124		558	4.85	1,315	11.43
Griswold	186	233		549	381		251	54		986	8.57	668	5.81
Shelby	32	65		150	56		59	10		241	2.1	131	1.14
Wayne	9	59		48	43		34	4		91	.79	106	.92
Cass	10	82		92	31		46	8		148	1.29	121	1.05
Abbott	13	18	5.3	3	15	5.8	1	0	7.4	17	.15	33	.28
Final		751			1,622			1,075				3,448	29.98

Summary of traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	67	105	56	82	310
Number of cars observed	51	96	31	25	203
Per cent. of scheduled cars observed	76.20	91.50	55.40	30.49	65.50

*NOTE—During the period covered by this survey the Baker Line, west of Trumbull, was not operating over its regular route.

BAKER LINE—EASTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
*Initial	431	0		1,188	0		269	0		341	0		2,228	25.30	0	0	2,967,696	0
Abbott	9	2		33	1		10	1		7	0		59	.67	4	.05	78,600	5,325
Eighth	2	2		18	3		22	4		7	0		49	.56	9	.10	65,200	11,980
Brooklyn	6	4		22	5		3	2		5	0		36	.41	11	.12	47,900	14,650
Sixth	4	7		8	8		6	3		3	2		21	.24	20	.23	27,900	26,625
Fifth	5	3		23	7		6	0		4	1		38	.43	11	.12	50,600	14,650
Fourth	1	0		5	4		2	2		3	1		11	.12	7	.08	14,650	9,320
Third	5	9		17	22		21	6		2	9		45	.51	46	.52	59,900	61,250
Second	0	8		11	6		1	2		1	14		13	.15	30	.34	17,300	40,000
First	0	4		6	2		3	2		1	4		10	.11	12	.14	13,320	16,000
Michigan	25	23	3.46	50	49	3.41	37	40	3.46	17	27	3.21	129	1.47	139	1.58	171,800	185,200
Cass	8	8		10	18		17	4		4	8		39	.44	38	.43	51,950	50,600
Wayne	5	19		32	54		20	9		8	19		65	.74	101	1.15	86,500	134,600
Shelby	6	31		65	112		56	18		16	22		143	1.62	183	2.08	190,500	243,900
Griswold	56	98		166	273		72	37		62	92		356	4.04	500	5.68	474,500	666,300
Woodward	47	97		277	335		168	46		74	72		566	6.44	550	6.25	754,468	732,800
Opera House	21	21	4.00	220	99	3.86	121	5	7.36	58	33	4.07	420	4.78	158	1.79	559,400	210,200
Farmer	19	20		107	94		57	9		31	24		214	2.43	147	1.67	285,000	195,970
Library	7	5		58	19		11	1		8	5		84	.95	30	.34	111,900	40,000
Randolph	14	1		21	17		13	3		12	5		60	.68	26	.29	79,900	34,600
Macomb	13	9		114	50		31	1		39	6		197	2.24	66	.75	262,200	87,900
Gratiot	6	1		73	9		27	0		17	0		123	1.40	10	.11	163,700	13,320
Brush	12	5		63	21		17	3		13	3		105	1.19	32	.36	139,900	42,600
Beaubien	5	2		29	11		6	2		9	2		49	.56	17	.19	65,200	22,600
Raynor	4	7		17	15		3	0		4	4		28	.32	26	.29	37,300	34,600
Antoine	2	2		36	26		7	5		11	7		56	.64	40	.45	74,600	53,250
Trolley Sta	0	1		2	6		1	2		0	1		3	.03	10	.11	4,000	13,320
Hastings	20	5		59	22		24	21		22	9		125	1.42	57	.65	166,500	75,900
Maple	2	2		10	22		4	1		1	0		17	.19	25	.28	22,640	33,600
Trolley Sta	3	0		2	1		1	5		1	1		7	.08	7	.08	9,320	9,320
Rivard	3	1		14	14		5	1		5	4		27	.31	20	.23	35,950	26,600

*NOTE—During the period covered by this survey the Baker Line, west of Trumbull, was not operating over its regular route.

BAKER LINE—EASTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Russell	8	18		14	31		7	13		2	4		31	.35	66	.75	41,300	87,900
Riopelle	8	7		29	29		5	13		6	12		48	.55	61	.69	63,900	81,200
Orleans	9	5	7.31	6	21	7.59	6	17	8.07	3	9	8.88	24	.27	52	.59	32,000	69,200
Trolley Sta	2	2		12	18		8	5		8	4		30	.34	29	.33	39,900	38,600
Trolley Sta	1	0		1	4		4	0		0	1		6	.07	5	.06	7,990	6,660
Adelaide	0	1		8	6		1	8		0	3		9	.10	18	.20	11,980	23,970
St. Aubin	9	4		17	26		6	12		2	8		34	.39	50	.57	45,500	66,600
Dubois	0	0		6	22		8	13		1	12		15	.17	47	.53	20,000	62,600
Brewster	0	1		3	4		0	4		6	3		9	.10	12	.14	11,980	16,000
Chene	32	13		97	51		33	24		65	10		227	2.58	98	1.11	302,124	130,500
Watson	79	2	4.31	36	14	4.25	11	8	4.29	6	4	4.57	132	1.50	28	.32	175,800	37,300
Erskine	2	2		38	4		20	10		18	3		78	.89	19	.22	103,900	25,300
Pierce	7	0		9	3		6	2		0	3		22	.25	8	.09	29,300	10,650
Scott	3	1		3	13		2	4		0	4		8	.09	22	.25	10,650	29,300
Hale	1	0		4	27		8	9		2	7		15	.17	43	.49	20,000	57,250
Mack	8	4		2	25		0	11		1	8		11	.12	48	.54	14,650	63,900
St. Joseph	3	1		2	16		4	19		4	16		13	.15	52	.59	17,300	69,200
Illinois	5	2		17	19		6	16		5	10		33	.37	47	.53	43,950	62,600
Leland	2	6		13	23		1	20		1	13		17	.19	62	.71	22,650	82,500
Alexandrine	9	7		9	37		2	19		5	11		25	.28	74	.84	33,300	98,500
Superior	1	1		4	26		3	24		5	5		13	.15	56	.64	17,300	74,600
Willis	6	10		4	23		0	19		3	11		13	.15	63	.72	17,300	83,900
Canfield	3	4		14	38		3	35		3	13		23	.26	90	1.02	30,600	119,900
Garfield	0	1		4	29		2	22		1	12		7	.08	64	.73	9,320	85,200
Forest	227	31	4.92	393	161	5.39	330	74	6.46	116	75	5.08	1,066	12.12	341	3.87	1,420,927	454,900
Hancock	0	1		10	19		3	13		2	4		15	.17	37	.42	20,000	49,262
Warren	3	11		9	34		2	14		3	6		17	.19	65	.74	22,650	86,500
Theodore	1	3		4	32		4	17		0	10		9	.10	62	.71	11,980	82,500
Farnsworth	4	1		11	37		0	29		1	4		16	.18	71	.81	21,300	94,500
Frederick	1	5		6	42		2	34		3	22		12	.14	103	1.17	16,000	137,200
Kirby	0	6		5	49		0	47		2	11		7	.08	113	1.28	9,320	150,600
Ferry	8	14		5	50		2	37		3	22		18	.20	123	1.40	23,980	163,800
Palmer	2	9		8	47		1	33		1	25		12	.14	114	1.30	16,000	151,800
Hendrie	3	11		1	57		0	29		4	23		8	.09	120	1.36	10,650	159,900
Medbury	1	5		4	38		1	23		4	14		10	.11	80	.91	13,320	106,600

BAKER LINE—EASTBOUND—Continued

Harper	5	15		7	61		6	64		15	29		33	.37	169	1.92	43,950	225,200
Piquette	0	12		5	59		1	57		2	28		8	.09	156	1.77	10,650	207,900
Trombley	0	15		6	95		0	70		4	21		10	.11	201	2.29	13,320	267,800
Milwaukee	2	31		4	80		0	41		4	26		10	.11	178	2.02	13,320	237,400
No. Gr. Blvd. E.	1	22	5.84	10	51	6.36	0	25	7.25	1	19	6.71	12	.14	117	1.33	16,000	155,800
Pollard	0	25		1	27		2	19		0	12		3	.03	83	.94	4,000	110,500
Dunn	0	19		0	29		0	19		0	10		0	0	77	.88	0	102,500
Newton	0	20		0	38		0	27		0	9		0	0	94	1.07	0	125,100
Whiting	0	77		0	79		0	25		0	8		0	0	189	2.15	0	251,900
Bismark	0	74		0	155		0	38		0	5		0	0	272	3.09	0	362,100
Amer. Rad. Co.	0	113		0	58		0	4		0	3		0	0	178	2.02	0	237,028
Rus. Wh. & Found	0	188	3.91	0	465	3.51	0	240	3.46	0	150	3.0	0	0	1,043	11.85	0	1,389,300
Totals			33.75			34.37			40.35			35.52	7,432		7,432		9,900,400	9,900,400

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	1,625			1,671			542			3,838	36.20		
Abbott	73	54		43	59		44	48		160	1.51	161	1.52
Cass	18	36		14	27		48	7		80	.75	70	.67
Wayne	13	72		27	80		22	14		62	.58	166	1.57
Shelby	31	125		79	173		99	18		209	2.07	316	2.98
Griswold	158	431		227	401		137	51		522	4.92	883	8.33
Woodward	278	392		608	527		337	47		1,223	11.53	966	9.12
Farmer	45	89		206	141		75	17		326	3.08	247	2.33
Library	8	19		46	32		12	3		66	.62	54	.52
Randolph	34	38		87	49		18	6		139	1.31	93	.88
Broadway	22	34	6.20	87	32	6.04	51	5	8.27	160	1.52	71	.67
Final		1,015			1,574			1,169				3,758	35.43

Summary of traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	58	110	64	68	291
Number of cars observed	44	103	32	15	194
Per cent. of scheduled cars observed	75.90	93.60	50.00	22.06	66.70

BRUSH LINE—NORTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Brush	8	0		52	0		67	0		61	0		188	2.85	0	0	245,860	0
Woodbridge	0	0		12	0		20	0		1	0		33	.50	0	0	43,190	0
Jefferson	6	0		34	1		30	0		17	1		87	1.32	2	.03	113,800	2,617
Randolph	0	0		0	0		1	0		2	1		3	.05	1	.01	3,925	1,309
Bates	0	0		5	0		4	1		5	1		14	.21	2	.03	18,325	2,617
Woodward	3	0		39	2		38	1		15	7		95	1.43	10	.15	124,400	13,087
Trolley Station	0	0		2	0		0	1		1	0		3	.05	1	.01	3,925	1,309
Larned	1	0		22	6		26	7		17	0		66	1.00	13	.20	86,400	17,013
Congress	1	1		37	3		24	1		13	1		75	1.13	6	.09	98,180	7,853
Fort	21	2		69	11		64	6		31	6		185	2.80	25	.38	242,100	32,715
Monroe	5	2		11	3		31	6		5	0		52	.79	11	.17	68,300	14,390
Opera House	20	2	5.50	138	10	5.67	101	17	6.33	75	18	4.94	334	5.07	47	.71	437,000	61,510
Farmer	0	1		80	2		40	2		61	2		181	2.74	7	.10	236,700	9,160
Library	1	0		22	2		15	3		4	0		42	.64	5	.08	54,980	6,541
Randolph	2	0		12	2		15	2		9	1		38	.58	5	.08	49,730	6,541
Macomb	8	0		59	4		26	3		47	5		140	2.12	12	.18	183,250	15,703
Gratiot	1	0		28	1		6	2		7	1		42	.64	4	.06	54,980	5,234
Brush	28	2	3.00	157	11	2.8	52	2	2.62	85	3	2.94	322	4.88	18	.27	421,400	23,560
Mechanic	1	0		8	1		1	0		8	0		18	.27	1	.01	23,560	1,309
Madison	1	0		4	4		0	2		13	5		18	.27	11	.17	23,560	14,390
Beacon	0	0		2	1		6	0		2	0		10	.15	1	.01	13,085	1,309
Adams	6	5		24	11		10	4		12	4		52	.79	24	.36	68,300	31,410
Elizabeth	0	0		2	5		0	5		5	13		7	.10	23	.35	9,160	30,100
Columbia	1	0		0	7		2	8		3	13		6	.09	28	.42	7,853	36,650
Montcalm	2	0		3	15		3	10		8	10		16	.24	35	.53	20,940	45,800
High	2	1		5	19		1	7		3	11		11	.17	38	.58	14,390	49,710
Napoleon	2	2		1	14		4	13		2	27		9	.14	56	.85	11,780	73,300
Adelaide	2	0		4	30		3	10		8	17		17	.26	57	.87	22,250	74,600
Alfred	2	3		6	25		3	15		3	24		14	.21	67	1.01	18,323	87,700
Brewster	0	0		1	2		0	6		1	7		2	.03	15	.23	2,618	19,633

BRUSH LINE—NORTHBOUND—Continued

Edmund	0	0		2	19		1	14		1	5		4	.06	38	.58	5,239	49,730
Watson	3	1	5.00	6	21	4.97	1	20	6.00	3	19	5.23	13	.20	61	.93	17,013	79,840
Erskine	2	1		4	36		1	12		1	14		8	.12	63	.95	10,470	82,440
Eliot	0	1		2	22		3	12		4	16		9	.14	51	.77	11,780	66,770
Rowena	4	9		4	19		2	14		2	12		12	.18	54	.82	15,703	70,680
Beaubien	1	22		3	17		9	6		2	1		15	.23	46	.70	19,635	60,200
Antoine	3	0		7	11		13	12		0	7		23	.35	30	.45	30,100	39,250
Brady	0	3		2	8		3	10		1	9		6	.09	30	.45	7,853	39,250
Livingstone	1	3		2	10		1	9		0	6		4	.06	28	.42	5,235	36,650
Illinois	1	3		0	9		1	8		2	7		4	.06	27	.41	5,235	35,340
Leland	0	3		0	8		1	10		1	8		2	.03	29	.44	2,618	37,950
Alexandrine	0	0		3	11		3	14		1	13		7	.10	38	.58	9,160	49,720
Superior	2	2		0	12		3	10		3	4		8	.12	28	.58	10,470	36,630
Willis	0	1		2	21		0	13		2	11		4	.06	46	.70	5,235	60,200
Canfield	2	1		0	30		0	9		0	17		2	.03	57	.87	2,618	74,600
Garfield	0	2		0	8		5	12		1	9		6	.09	31	.47	7,853	40,560
Forest	13	15	6.30	40	41	6.20	60	22	7.78	14	30	5.29	127	1.93	108	1.64	166,100	141,300
Hancock	0	3		1	13		4	15		3	8		8	.12	39	.59	10,470	51,010
Warren	32	0		14	8		2	9		0	18		48	.73	35	.53	62,800	45,800
Theodore	0	1		2	17		0	18		0	20		2	.03	56	.85	2,618	73,300
Farnsworth	2	3		25	31		7	18		0	13		34	.52	65	.98	44,500	85,050
Hastings	2	8		9	20		0	19		3	15		14	.21	62	.94	18,325	81,150
Trolley Station	1	0		1	11		0	4		0	9		2	.03	24	.36	2,618	31,410
Rivard	0	3		1	15		1	15		0	14		2	.03	47	.71	2,618	61,510
Russell	0	10		2	54		0	48		0	8		2	.03	120	1.82	2,618	157,020
Frederick	1	5		0	76		0	58		1	19		2	.03	158	2.40	2,618	206,800
Kirby	0	1		0	40		0	41		0	13		1	.01	95	1.43	1,309	124,300
Ferry	0	14	5.60	1	36	6.13	0	26	6.78	0	17	5.11	0	0	93	1.40	0	121,700
Palmer	0	1		0	16		0	13		0	3		0	0	33	.50	0	43,180
Hendrie	0	0		0	4		0	6		0	7		0	0	17	.26	0	22,250
Medbury	0	1		0	5		0	13		0	9		0	0	28	.42	0	36,650
Harper	0	7		0	18		0	5		0	2		0	0	32	.48	0	41,890
Piquette	0	49	3.10	0	113	3.10	0	65	4.11	0	28	2.94	0	0	255	3.86	0	333,850
Totals			28.50			28.87			33.62			26.45	2,449		2,449		3,205,070	3,205,070

BRUSH LINE—NORTHBOUND

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers On	Off	Time Min.	Passengers On	Off	Time Min.	Passengers On	Off	Time Min.	Passengers On	Av. per car	Off	Av. per car
Initial	8	0		27	0		22	0		57	.72	0	0
Atwater	10	0		123	0		90	0		223	2.82	0	0
Franklin	3	0		2	2		1	0		6	.08	2	.02
Woodbridge	4	0		2	2		7	0		13	.16	2	.02
Jefferson	13	3		32	1		58	0		103	13.0	4	.05
Randolph	3	0		3	0		14	0		20	.25	0	0
Bates	8	0		13	3		13	1		34	.43	4	.05
Woodward	22	1		47	5		50	1		119	1.51	7	.09
Larned	8	2		29	9		35	6		72	.91	17	.21
Congress	12	3		54	11		28	4		94	1.19	18	.23
Fort	58	2		129	30		156	23		343	4.63	55	.69
Monroe	95	7		279	26		162	42		536	6.79	75	.95
Farmer	8	1		133	6		71	5		212	2.68	12	.15
Library	1	0		34	2		13	0		48	.61	2	.02
Randolph	21	4		41	4		9	0		71	.90	8	.10
Broadway	20	6		100	12		59	5		179	2.27	23	.29
Brush	140	2		234	20		84	7		458	5.8	29	.37
Mechanic	14	0		3	2		4	5		21	.27	7	.09
Madison	3	2		21	13		4	1		28	.35	16	.20
Beacon	1	0		7	4		1	2		9	.11	6	.08
Adams	8	20	9.95	32	14	10.0	9	5	12.0	49	.62	39	.49
Final	407	0		1,179	0		783	0		2,369	30.0	0	0

Summary of traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	52	70	35	40	197
Number of cars observed	31	75	22	17	145
Per cent. of scheduled cars observed	59.6	107.1	62.8	42.5	73.6

BRUSH LINE—SOUTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers On	Off	Time Min.	Passengers On	Off	Time Min.	Passengers On	Off	Time Min.	Passengers On	Off	Time Min.	Passengers On Total	Av. per car	Passengers Off Total	Av. per car	On	Off
Piquette	53	0		157	0		82	0		71	0		363	5.50	0	0	439,000	0
Harper	6	0		24	0		85	0		14	0		129	1.96	0	0	156,100	0
Medbury	5	0		11	0		4	0		4	0		24	.36	0	0	29,070	0
Hendrie	7	0		7	0		9	0		8	0		31	.47	0	0	37,530	0
Palmer	9	0		24	0		3	0		7	0		43	.65	0	0	52,020	0
Ferry	25	1	3.0	38	0	2.39	17	0	3.89	17	0	2.22	97	1.47	1	.01	117,300	1,210
Kirby	12	0		26	0		10	0		7	0		55	.83	0	0	66,590	0
Frederick	14	0		39	1		3	0		18	0		74	1.12	1	.01	89,500	1,210
Farnsworth	24	0		46	1		11	2		14	0		95	1.44	3	.05	114,900	3,631
Rivard	22	0		30	0		1	0		7	1		60	.91	1	.01	72,670	1,210
Trolley Station	11	0		10	1		0	0		4	1		25	.38	2	.03	30,270	2,421
Hastings	36	2		42	2		7	1		41	4		126	1.91	9	.14	152,400	10,791
Antoine	17	0		41	1		3	1		14	1		75	1.14	3	.05	90,700	3,631
Theodore	16	0		20	0		3	1		14	0		53	.80	1	.01	64,190	1,210
Warren	14	1		14	1		0	1		15	1		43	.65	4	.06	52,020	4,843
Hancock	9	0		21	0		0	0		6	3		36	.54	3	.05	43,590	3,631
Forest	25	55	4.90	77	80	4.52	30	80	4.14	47	41	4.53	179	2.72	256	3.88	216,500	309,900
Garfield	11	0		13	1		5	1		8	2		37	.56	4	.06	44,800	4,843
Canfield	10	1		32	2		1	1		16	2		59	.89	6	.09	71,430	7,262
Willis	13	1		23	3		3	5		12	4		51	.78	13	.20	61,750	15,740
Superior	15	0		11	4		3	4		10	1		39	.59	9	.14	47,120	10,791
Alexandrine	10	0		8	6		1	4		8	8		27	.41	18	.27	32,690	21,782
Leland	10	1		12	2		1	2		2	3		25	.38	8	.12	30,270	9,684
Illinois	14	0		17	3		1	1		17	0		49	.74	4	.06	59,320	4,843
Livingstone	14	2		13	3		0	1		11	4		38	.58	10	.15	46,000	12,002
Brady	8	0		21	6		0	1		5	3		34	.52	10	.15	41,180	12,002
Rowena	16	1		31	10		2	4		13	5		62	.94	20	.30	75,000	24,204
Beaubien	7	4		18	8		10	1		5	6		40	.61	19	.29	48,420	23,010
Brush	2	0		14	2		2	1		13	1		31	.47	4	.06	37,530	4,843
Eliot	5	1		9	4		0	2		13	1		27	.41	8	.12	32,690	9,684

BRUSH LINE—SOUTHBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Benton	8	1		15	1		1	1		9	4		33	.50	7	.10	39,950	8,478
Watson	17	1	5.72	20	1	4.74	8	2	5.29	14	0	6.38	59	.89	4	.06	71,430	4,843
Edmund	5	0		20	2		5	0		9	4		39	.59	6	.09	47,220	7,262
Alfred	14	3		24	2		1	3		13	8		52	.79	16	.24	62,900	19,375
Division	9	0		13	1		0	3		11	2		33	.50	6	.09	39,960	7,262
Napoleon	8	3		14	8		5	5		19	3		46	.70	19	.29	55,550	22,980
High	4	2		15	3		3	0		7	4		29	.44	9	.14	35,000	10,890
Montcalm	3	0		9	2		4	4		8	10		24	.36	16	.24	29,050	19,360
Columbia	2	2		14	3		0	1		3	1		19	.29	7	.10	23,000	8,478
Elizabeth	0	1		6	7		2	7		0	8		8	.12	23	.35	9,682	27,830
Adams	7	13		13	19		2	5		3	13		25	.38	50	.76	30,250	60,500
Beacon	0	0		0	1		2	3		2	0		4	.06	4	.06	4,842	4,843
Madison	1	3		7	9		0	1		4	4		12	.18	17	.26	14,523	20,580
Mechanic	0	0		0	2		0	2		0	5		0	0	9	.14	0	10,890
Gratiot	8	57	5.00	17	132	4.89	0	45	6.11	12	77	4.97	37	.56	311	4.72	44,700	376,100
Randolph	0	4		8	37		0	5		0	5		8	.12	51	.77	9,683	61,710
Macomb	1	22		12	57		4	16		1	27		18	.27	122	1.85	21,782	147,600
Monroe	0	22		2	33		0	14		3	25		5	.08	94	1.42	6,052	113,740
Library	0	5		4	16		0	4		1	10		5	.08	35	.53	6,052	42,350
Farmer	0	18		2	70		2	13		1	28		5	.08	129	1.96	6,032	156,300
Opera House	7	108	2.90	14	119	2.71	8	20	3.78	3	62	2.58	32	.48	309	4.69	38,730	373,380
Woodward	4	9		9	87		2	15		10	55		25	.38	166	2.51	30,270	200,700
Fort	10	41		32	82		0	11		10	21		52	.79	155	2.35	62,890	187,600
McMillan Cros.	0	0		0	1		0	2		0	0		0	0	3	.05	0	3,631
Congress	4	18		13	39		0	4		4	11		21	.32	72	1.09	25,416	87,110
Larned	0	16		4	32		0	6		2	18		6	.09	72	1.09	7,262	87,110
Jefferson	2	66		12	85		0	16		2	32		16	.24	199	3.02	19,375	240,800
Woodbridge	1	18		1	18		0	3		0	0		2	.03	39	.59	2,421	47,220
Atwater	0	14		1	30		1	5		5	18		7	.10	67	1.01	8,478	81,100
Bates	0	2		0	3		0	0		0	1		0	0	6	.09	0	7,262
Randolph	0	6		0	3		0	1		0	0		0	0	10	.15	0	12,100
Brush St. Depot	0	30	5.00	0	104	5.25	0	16	5.89	0	49	4.87	0	0	199	3.01	0	240,878
Totals			26.52			24.50			29.10			25.55	2,649		2,649		3,205,070	3,205,070

BRUSH LINE—SOUTHBOUND

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	1,126	0		1,479	0		438	0		3,043	38.52	0	0
Adams	13	15		26	27		6	7		45	.57	49	.62
Beacon	0	4		4	6		0	8		4	.06	18	.23
Madison	4	21		11	12		2	0		17	.21	33	.42
Mechanic	0	0		2	0		0	1		2	.03	1	.01
Gratiot	8	142		23	217		11	138		42	.53	497	6.20
Randolph	3	27		17	105		3	22		23	.29	154	1.95
Broadway	12	40		9	78		5	38		26	.33	156	1.97
Monroe	4	43		3	47		2	9		9	.11	99	1.25
Library	0	8		6	29		0	12		6	.08	49	.62
Farmer	1	29		7	144		5	23		13	.17	196	2.48
Woodward	69	379		58	342		22	111		149	1.89	832	10.50
Fort	47	135		67	175		17	21		131	1.66	331	4.19
Congress	11	58		15	64		6	13		32	.41	135	1.71
Larned	7	51		0	84		0	5		7	.09	140	1.77
Jefferson	8	145		9	127		6	41		23	.29	313	3.96
Woodbridge	3	37		16	16		0	3		19	.24	56	.71
Atwater	4	37		9	57		4	20		17	.21	114	1.44
Bates	0	15		1	15		4	0		5	.06	30	.38
Randolph	0	32		0	13		1	9		1	.01	54	.68
Brush	1	103	10.9	4	208	10.21	0	51	12.83	5	.06	362	4.58

Summary of traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
No. of cars scheduled	52	70	35	40	197
No. of cars observed	32	74	21	18	145
Per cent. of scheduled cars observed	61.5	105.7	60.0	45.0	73.6

CROSSTOWN LINE—WESTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Initial	39	0		33	0		16	0		0	0		88	1.01	0	0	152,172	0
Field	38	0		149	0		278	0		96	0		561	6.45	0	0	969,120	0
E. Gr. Blvd.	0	2		14	3		56	1		12	0		82	.94	6	.07	141,500	10,375
Helen	1	1		0	3		9	2		7	0		26	.30	6	.07	44,900	10,375
Canton	2	12		16	1		51	1		2	0		71	.82	14	.16	122,500	24,200
Concord	26	23		100	19		156	3		60	0		342	3.93	45	.52	591,100	77,700
Trolley Station	0	0		3	0		8	1		0	0		11	.13	1	.02	19,000	1,728
Champlain	10	2		53	3		78	4		34	4		175	2.02	13	.15	302,500	22,490
Trolley Station	0	0		3	0		0	2		2	0		5	.06	2	.02	8,650	3,460
St. Paul	7	0		19	3		2	6		4	3		32	.37	12	.14	55,300	20,738
Trolley Station	0	0		1	0		0	2		2	1		3	.03	3	.03	5,190	5,190
Concord	75	8		121	70		92	84		49	41		337	3.87	203	2.33	582,400	350,800
Bellevue	0	0		8	2		11	3		3	2		22	.25	7	.08	38,000	12,100
Beaufait	2	1		6	0		3	0		2	0		13	.15	1	.02	22,450	1,728
Meldrum	0	0		7	6		5	1		6	0		18	.21	7	.08	31,000	12,100
Mt. Elliott	4	0		1	1		6	1		2	0		13	.15	2	.02	22,400	3,460
Waterloo	6	5	9.25	15	9	8.55	28	27	8.63	19	7	7.89	68	.78	48	.55	117,400	82,900
Hendricks	14	6		14	7		6	10		9	4		43	.49	27	.31	74,100	46,700
Hunt	3	0		9	1		3	2		3	1		18	.21	4	.05	31,100	6,915
Charlevoix	9	0		9	5		16	4		10	6		44	.51	15	.17	76,000	25,930
Arndt	4	3		7	5		9	3		3	6		23	.26	17	.20	39,775	29,400
Berlin	2	3		8	7		1	12		2	4		13	.15	26	.30	22,456	44,900
Heidelberg	5	1		4	1		1	4		1	0		11	.13	6	.07	19,000	10,375
Schneider	2	0		0	2		0	1		0	0		2	.02	3	.03	3,460	5,190
Preston	6	0		2	4		0	6		0	0		8	.09	10	.11	13,825	17,270
Ludden	0	0		0	0		0	1		0	0		0	0	1	.02	0	1,728
Mack	67	30		126	101		86	114		74	53		353	4.06	298	3.43	609,850	515,000
Pulford	1	3		4	1		0	7		1	5		6	.07	16	.18	10,375	27,600
Zender Place	1	1		2	0		0	0		1	5		4	.05	6	.07	6,915	10,375
Sylvester	2	0		2	7		3	7		4	1		11	.13	15	.17	19,000	25,930
Gratiot	60	22		106	94		54	89		61	35		281	3.23	240	2.76	485,900	414,800

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CROSSTOWN LINE—WESTBOUND—Continued

Gratiot N. Side	7	1		11	6		53	70		25	19		96	1.10	96	1.10	165,800	165,750
Canfield	3	3		5	6		5	6		5	6		18	.21	21	.24	31,120	36,200
Garfield	2	2		1	3		1	3		3	4		7	.08	12	.14	12,100	20,750
Mt. Elliott	86	4	6.75	135	29	6.46	122	26	6.75	48	12	6.89	391	4.49	71	.82	675,800	122,500
Heck	1	0		6	1		0	2		5	1		12	.14	4	.05	20,750	6,915
Ellery	4	0		4	9		0	10		0	6		8	.09	25	.29	13,825	43,200
Thompson Ct.	6	2		4	4		2	5		7	2		19	.22	13	.15	32,830	22,490
Moran	14	0		27	12		9	12		11	5		61	.70	29	.33	105,450	50,150
Galster	2	1		2	4		2	8		13	4		19	.22	17	.20	32,830	29,400
Collins	8	1		18	4		1	12		15	5		42	.48	22	.25	72,600	38,000
McDougall	16	1		13	12		3	9		9	6		41	.47	28	.32	70,850	48,400
Mitchell	8	1		12	14		3	4		7	6		30	.34	25	.29	51,850	43,200
Jos. Campau	2	2		7	4		2	5		3	3		14	.16	14	.16	24,200	24,200
Grandy	27	47		48	62		71	120		21	30		167	1.92	259	2.98	288,800	447,000
Chene	76	26		164	38		123	49		90	23		453	5.21	136	1.56	782,400	235,000
Dubois	3	1		12	7		13	20		7	1		35	.40	29	.33	60,500	50,150
St. Aubin	19	11		27	17		16	25		13	2		75	.86	55	.63	129,600	95,000
Trolley Station	0	3		4	3		1	0		0	1		5	.06	7	.08	8,650	12,100
Dequindre	14	5	6.64	12	4	6.72	6	2	6.18	1	3	6.23	33	.38	14	.16	57,000	24,200
Orleans	10	6		18	14		3	17		7	13		38	.44	50	.57	65,620	86,400
Riopelle	16	7		38	24		6	34		21	12		81	.93	77	.89	140,000	133,000
Russell	6	6		43	13		4	15		10	13		63	.72	47	.54	108,900	81,200
Rivard	3	6		21	21		9	13		5	6		38	.44	46	.53	65,620	79,500
Hastings	52	86		65	104		49	102		28	71		194	2.23	363	4.18	335,045	627,000
Antoine	24	15		70	32		63	25		17	14		174	2.00	86	.99	300,500	148,500
Beaubien	22	24		102	70		88	31		38	18		250	2.87	143	1.64	431,600	247,000
Brush	8	5		13	22		1	7		12	6		34	.39	40	.46	58,775	69,180
John R	1	1		9	18		4	11		3	11		17	.20	41	.47	29,400	70,800
Woodward	46	221	6.55	329	361	6.42	247	127	7.00	206	162	6.17	828	9.51	871	10.00	1,431,000	1,504,614
Cass	2	17		77	22		9	0		12	16		100	1.15	55	.63	172,700	95,000
Second	2	4		7	26		2	12		9	16		20	.23	58	.67	34,600	100,100
Third	13	13		70	57		29	42		39	27		151	1.74	139	1.60	261,000	240,000
Fourth	0	1		6	7		4	15		0	8		10	.11	31	.36	17,270	53,580
Greenwood	6	36		22	84		12	74		22	64		62	.72	258	2.97	107,200	445,800
Sixth	3	1		3	5		0	8		1	5		7	.08	19	.22	12,100	32,830
Brooklyn	2	2		1	11		1	14		5	10		9	.10	37	.43	15,560	64,000
Lincoln	1	0		6	9		2	5		0	9		9	.10	23	.26	15,560	39,775
Trumbull	4	27		35	105		38	64		17	36		94	1.08	232	2.67	162,500	402,000
Commonwealth	0	0		3	9		1	7		4	10		8	.09	26	.30	13,825	44,950
Avery	3	2		10	18		1	13		6	16		20	.23	49	.56	34,600	84,600

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CROSSTOWN LINE—WESTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Twelfth	2	9		2	15		4	17		1	10		9	.13	51	.59	15,560	88,100
Vermont	0	2		3	10		0	8		0	6		3	.03	26	.30	5,190	44,950
Wabash	1	4		1	12		0	5		0	3		2	.02	24	.28	3,460	41,500
Fourteenth	8	90	7.25	93	292	7.20	83	172	7.93	57	151	6.95	241	2.77	705	8.10	416,200	1,218,500
Hancock	0	0		3	5		0	1		0	2		3	.03	8	.09	5,190	13,825
Warren	6	4		44	7		38	12		15	24		103	1.18	47	.54	178,000	81,200
Fifteenth	0	1		0	2		0	4		0	2		0	0	9	.10	0	15,560
Sixteenth	13	8		77	30		56	20		60	17		206	2.37	75	.86	355,897	129,500
Seventeenth	1	2		3	7		1	4		0	1		5	.06	14	.16	8,650	24,200
Humboldt	10	8		4	12		3	5		10	2		27	.31	27	.31	46,700	46,700
Lawton	1	2		31	26		11	7		0	5		43	.49	40	.46	74,300	69,180
Maybury	2	7		4	36		17	27		0	12		23	.26	82	.94	39,775	141,550
Williams	1	8		1	13		0	14		2	7		4	.05	42	.48	6,915	72,600
Tillman	0	9		0	24		2	24		0	13		2	.02	70	.80	3,460	120,900
Twenty-third	0	4		3	24		0	19		0	19		3	.03	66	.76	5,190	114,000
Twenty-fourth	0	6	6.00	2	34	6.18	0	32	6.56	4	16	5.05	6	.07	88	1.01	10,375	152,100
Twenty-fifth	1	3		1	33		3	28		0	19		5	.06	83	.95	8,650	143,400
Roosevelt	1	1		4	31		0	32		1	18		6	.07	82	.94	10,375	141,550
McKinley	0	5		4	41		1	26		2	12		7	.08	84	.97	12,100	145,100
Vinewood	0	1		0	23		3	32		0	20		3	.03	76	.87	5,190	131,226
W. Gr. Blvd	0	13		1	28		0	21		2	23		3	.03	85	.98	5,190	146,826
La Salle	1	6		2	21		0	26		1	16		4	.05	69	.79	6,915	119,100
Scotten	0	4		0	26		0	29		0	19		0	0	78	.90	0	134,700
Lovett	0	4		0	17		0	20		0	3		0	0	44	.51	0	76,000
Twenty-eighth	0	6		0	14		0	28		0	11		0	0	59	.68	0	101,950
Thirtieth	0	3		0	21		0	17		0	8		0	0	49	.56	0	84,650
Thirty-first	0	32	4.75	0	164	4.78	0	154	5.87	0	70	4.84	0	0	420	4.83	0	726,068
Totals			47.19			46.31			48.92			44.02	7,125		7,125		12,310,700	12,310,700

Summary of traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	92	146	63	94	395
Number of cars observed	12	40	16	19	87
Per cent. of scheduled cars observed	13.1	27.4	25.4	20.2	22.0

CROSSTOWN LINE—EASTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
31st	41	0		22	0		0	0		12	0		75	.86	0	0	124,600	0
30th	60	0		112	0		103	0		45	0		320	3.68	0	0	531,942	0
28th	23	0		17	3		22	0		14	1		76	.87	4	.05	126,300	6,650
Lovett	15	0		24	0		14	0		10	0		63	.72	0	0	104,800	0
Scotten	11	0		36	0		17	1		13	0		77	.89	1	.02	128,000	1,662
LaSalle	13	0		29	2		17	2		17	1		76	.87	5	.06	126,300	8,320
West.Grand Blv.	22	0		29	2		9	3		12	0		72	.83	5	.06	119,750	8,320
Vinewood	17	0		38	3		21	0		21	0		97	1.11	3	.03	161,100	4,985
McKinley	16	0		35	1		33	2		28	4		112	1.29	7	.08	186,300	11,640
Roosevelt	15	0		31	1		24	2		19	1		89	1.02	4	.05	148,000	6,650
25th	12	0		20	1		13	1		13	2		58	.67	4	.05	96,400	6,650
24th	21	0	5.29	20	0	4.86	12	2	4.88	11	0	4.90	64	.74	2	.02	106,480	3,325
23d	29	0		33	2		22	4		6	3		90	1.03	9	.10	149,500	14,960
Tillman	20	0		27	0		32	1		10	1		89	1.02	2	.02	148,000	3,325
Williams	25	2		27	0		30	1		12	2		94	1.08	5	.06	156,200	8,320
Maybury	18	3		44	4		76	1		16	3		154	1.77	11	.13	256,100	18,300
Lawton	10	2		24	2		54	5		23	0		111	1.28	9	.10	184,500	14,960
Humboldt	14	2		3	2		18	4		9	0		44	.51	8	.09	73,200	13,300
17th	0	1		1	4		19	2		1	0		21	.24	7	.08	34,920	11,640
Grand River	111	98		195	192		147	86		73	58		526	6.05	434	4.99	874,500	721,900
16th	1	0		0	0		1	2		1	0		3	.03	2	.02	4,985	3,325
15th	2	0		0	1		0	0		0	0		2	.02	1	.02	3,325	1,662
14th	70	46	6.12	137	109	6.16	116	55	6.29	107	41	6.25	430	4.95	251	2.89	715,000	417,100
Wabash	10	0		9	2		3	2		3	2		25	.29	6	.07	41,600	9,980
Vermont	8	0		13	0		13	4		10	0		44	.51	4	.05	73,200	6,650
12th	6	0		21	5		36	3		16	6		79	.91	14	.16	131,300	23,300
Avery	7	0		23	5		5	8		7	10		42	.48	23	.26	69,800	38,250
Commonwealth	4	1		14	3		4	4		2	1		24	.28	9	.10	39,900	14,960
Trumbull	19	17		73	30		54	26		38	11		184	2.12	84	.97	306,000	139,500
Lincoln	4	2		20	9		6	2		12	2		42	.48	15	.17	69,800	24,950
Brooklyn	3	2		23	2		6	8		6	3		38	.44	15	.17	63,200	24,950
Greenwood	22	50		71	62		25	35		27	34		145	1.67	181	2.08	241,000	300,813
Grant Court	0	0		2	0		0	0		0	2		2	.02	2	.02	3,325	3,325
4th	0	0		3	4		3	3		4	1		10	.11	8	.09	16,620	13,300
3d	34	7		129	28		164	22		46	12		373	4.29	69	.79	620,000	114,650
2d	2	5		12	4		5	6		8	3		27	.31	18	.21	44,900	29,930

CROSSTOWN LINE—EASTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Trolley Station..	0	9		1	0		0	0		1	0		2	.02	9	.10	3,325	14,960
Cass	3	5		70	18		36	1		14	26		123	1.41	50	.57	204,500	83,150
Woodward	65	208	7.71	323	376	7.47	396	130	7.29	207	144	7.20	991	11.39	867	9.96	1,647,700	1,441,200
John R	2	1		8	7		3	2		6	1		19	.22	11	.13	31,600	18,300
Brush	1	4		3	17		1	4		2	15		7	.08	40	.46	11,640	66,500
Beaubien-War'n	22	11		29	40		58	25		40	32		149	1.71	108	1.24	247,900	179,600
Hancock	0	2		0	5		4	3		1	4		5	.06	14	.16	8,320	23,300
Forest-Beaubien	31	11		73	62		81	64		81	30		266	3.06	167	1.82	442,200	277,900
Antoine	10	6		35	33		20	48		15	16		80	.92	103	1.18	133,100	171,300
Hastings	38	49		94	153		86	104		34	57		252	2.90	363	4.18	419,100	603,400
Rivard	4	2		20	10		6	18		10	4		40	.46	34	.39	66,500	56,550
Russell	6	8		14	20		11	39		5	11		36	.41	78	.90	59,820	129,600
Riopelle	5	6		17	20		19	47		28	27		69	.79	100	1.15	114,800	166,200
Orleans	1	3		9	17		9	22		13	7		32	.37	49	.56	52,200	81,400
Dequindre	2	6	7.92	4	17	7.03	8	16	8.88	0	4	8.25	14	.16	43	.49	23,300	71,500
Trolley Station..	0	7		2	6		1	1		0	0		3	.03	14	.16	4,985	23,300
St. Aubin	4	14		25	34		38	42		5	12		72	.83	102	1.17	119,650	169,600
Dubois	0	1		2	14		6	20		2	10		10	.11	45	.52	16,620	74,800
Chene	24	19		62	84		96	92		52	53		234	2.69	248	2.85	389,100	412,200
Grandy	5	74		25	188		39	244		18	78		87	1.00	584	6.72	144,600	970,900
Jos. Campau	2	3		2	12		5	17		3	7		12	.14	39	.45	19,950	64,800
Mitchell	2	4		5	13		4	16		6	14		17	.20	47	.54	28,280	78,150
McDougall	4	3		5	18		6	20		1	10		16	.18	51	.59	26,600	84,800
Collins	5	1		6	30		2	26		1	11		14	.16	68	.78	23,300	113,070
Galster	0	0		2	9		1	13		0	1		3	.03	23	.26	4,985	38,250
Moran	8	1		11	11		4	28		4	15		27	.31	55	.63	44,900	91,400
Thompson Ct	2	0		5	7		1	7		2	2		10	.11	16	.18	16,620	26,600
Ellery	1	2		1	3		1	5		3	5		6	.07	15	.17	9,980	24,950
Heck Place	0	0		0	2		0	2		2	3		2	.02	7	.08	3,325	11,640
Mt. Elliot-Forest	11	52	6.08	25	123	6.57	60	137	6.88	19	71	6.00	115	1.32	383	4.40	191,300	636,880
Garfield	1	2		0	6		0	1		5	3		6	.07	12	.14	9,980	19,950
Canfield	2	1		1	2		2	3		2	2		7	.08	8	.09	11,640	13,300
Gratiot-Willis	40	41		80	134		66	177		90	92		276	3.17	444	5.10	458,900	738,000
Sylvester	6	1		5	2		2	9		3	5		16	.18	17	.20	26,600	28,280
Zender Place	2	0		0	2		0	3		2	2		4	.05	7	.08	6,652	11,640

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CROSSTOWN LINE—EASTBOUND—Continued

Pulford	0	0		4	1		0	0		0	1		4	.05	2	.02	6,650	3,325
Mack	26	38		59	72		53	137		70	80		208	2.39	327	3.76	345,900	543,700
Ludden	0	1		1	1		2	4		0	0		3	.03	6	.07	4,985	9,980
Preston	3	1		4	4		0	8		0	4		7	.08	17	.20	11,640	28,280
Schneider	0	1		1	3		0	8		2	7		3	.03	19	.22	4,985	31,600
Heidelberg	2	0		2	3		1	11		4	2		9	.10	16	.18	14,960	26,600
Berlin	3	1		12	6		4	15		2	5		21	.24	27	.31	34,949	44,900
Arndt	2	0		2	8		1	6		3	2		8	.09	16	.18	13,300	26,600
Charlevoix	3	5		2	19		2	13		6	11		13	.15	48	.55	21,610	79,800
Hunt	0	0		0	2		0	3		0	4		0	0	9	.10	0	14,960
Hendricks	7	4		10	13		23	14		1	8		41	.47	39	.45	68,157	64,800
Waterloo	0	5	6.29	20	21	5.97	29	29	6.37	12	13	5.90	61	.70	68	.78	101,400	113,100
Kercheval-Mt Elliot	4	3		2	4		0	11		3	10		9	.10	28	.32	14,960	46,550
Meldrum	6	2		4	12		2	19		2	18		14	.16	51	.59	23,300	84,800
Beaufait	3	3		1	3		1	7		2	1		7	.08	14	.16	11,640	23,300
Bellevue	0	0		2	7		0	15		2	8		4	.05	30	.34	6,650	49,900
Concord-Kerche.	17	44		53	71		25	115		22	91		117	1.35	321	3.69	194,400	533,583
Trolley Station..	0	1		0	2		0	4		0	3		0	0	10	.11	0	16,620
St. Paul	3	6		4	16		1	9		6	8		14	.16	39	.45	23,300	64,800
Trolley Station..	0	2		3	1		1	8		0	0		4	.05	11	.13	6,650	18,300
Champlain-Conc.	1	50		6	35		2	45		4	30		13	.15	160	1.84	21,610	266,050
Canton	1	0		1	14		0	9		0	7		2	.02	30	.34	3,325	49,900
Helen	1	3	6.08	0	11	6.24	1	18	6.60	0	10	6.05	2	.02	42	.48	3,325	69,800
E. Grand Blvd.	1	3		0	13		2	12		6	38		9	.10	66	.76	14,960	109,900
Field-Champlain	7	3		16	13		6	22		1	18		30	.34	56	.64	49,900	93,100
Trolley Station..	0	2		1	2		1	3		0	2		2	.02	9	.10	3,325	14,960
Congress	0	0		0	6		0	1		0	5		0	0	12	.14	0	19,950
Jefferson	0	106	2.67	0	150	2.53	0	115	2.64	0	108	2.42	0	0	479	5.50	0	796,000
Left on car		5			0			0			5				10	.11		16,620
Totals			48.16			46.83			49.83			46.97	7,405		7,405		12,310,700	12,310,700

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Summary of traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	81	148	62	89	380
Number of cars observed	12	38	17	20	87
Per cent. of scheduled cars observed	14.8	25.7	27.4	22.5	22.9

FORT LINE—WESTBOUND—WOODMERE DIVISION

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Baldwin	12	0		62	0		20	0		29	0		123	2.93	0	0	252,300	0
Townsend	4	0		20	0		2	0		6	0		32	.76	0	0	65,600	0
Sheridan	7	0		9	0		8	0		7	1		31	.74	1	.02	63,580	2,051
Field	6	0		15	0		3	0		7	0		31	.74	0	0	63,580	0
Trolley Station	0	0		0	0		0	0		3	0		3	.07	0	0	6,149	0
Congress	1	0		0	1		4	0		3	0		8	.19	1	.02	16,410	2,051
Jefferson	13	4		16	7		11	2		18	0		58	1.38	13	.31	118,900	26,660
East Gr. Blvd.	1	0		10	0		4	0		4	0		19	.45	0	0	38,970	0
Helen	3	0		12	1		4	0		3	0		22	.52	1	.02	45,130	2,051
Larned	3	0		1	0		0	0		2	0		6	.14	0	0	12,310	0
Congress	1	0		1	0		0	0		1	0		3	.07	0	0	6,149	0
Fort	8	1		0	0		0	0		0	0		8	.19	1	.02	16,410	2,051
Lafayette	6	0		41	0		11	0		15	0		73	1.74	0	0	149,700	0
Canton	10	0		24	2		12	0		10	0		56	1.33	2	.05	114,800	4,101
Concord	12	0		51	1		14	0		19	0		96	2.28	1	.02	196,800	2,051
Bellevue	5	0		28	1		14	1		11	1		58	1.38	3	.07	118,900	6,152
Beaufait	2	0		9	0		1	1		6	0		18	.43	1	.02	36,910	2,051
Meldrum	8	0		21	3		5	0		3	2		37	.88	5	.12	75,880	10,250
Mt. Elliott	1	0	8.5	10	0	8.05	4	2	6.60	22	4	8.33	37	.88	6	.14	75,880	12,310
Leib	6	0		29	1		1	2		11	2		47	1.12	5	.12	96,350	10,250
Trolley Station	3	0		2	1		0	0		0	0		5	.12	1	.02	10,250	2,051
Elmwood	10	0		17	3		4	6		5	1		36	.86	10	.24	73,820	20,510
Monroe	1	0		17	1		3	4		8	7		29	.69	12	.29	59,490	24,610
McDougall	10	0		20	4		3	2		4	1		37	.88	7	.17	75,880	14,350
Jos. Campau	8	3		33	5		3	1		7	4		51	1.21	13	.31	104,600	26,660

FORT LINE—WESTBOUND—Continued—WOODMERE DIVISION

Trolley Station	0	0		3	0		0	1		2	1		5	.12	2	.05	10,250	4,101
Chene	13	2		31	18		12	10		19	18		75	1.79	48	1.14	153,800	98,420
Dubois	7	2	5.25	11	2	4.76	4	1	4.16	4	3	4.70	26	.62	8	.19	53,300	16,410
St. Aubin	12	0		18	3		6	3		26	4		62	1.48	10	.24	127,200	20,510
Trolley Station	13	6		40	2		1	2		1	1		55	1.31	11	.26	112,800	22,560
Orleans	7	0		9	0		3	0		17	1		36	.86	1	.02	73,820	2,051
Riopelle	9	0		27	3		2	2		9	3		47	1.12	8	.19	96,350	16,410
Russell	19	0		20	1		15	2		11	0		65	1.55	3	.07	133,300	6,152
Rivard	5	1		11	3		2	4		3	1		21	.50	9	.21	43,070	18,460
Trolley Station	0	0		2	0		0	0		0	0		2	.05	0	0	4,101	0
Hastings	3	3		12	2		11	0		9	3		35	.83	8	.19	71,750	16,410
Antoine	3	3	5.5	12	9	5.53	6	1	5.4	3	4	6.27	24	.57	17	.41	49,220	34,860
Beaubien	1	3		3	8		3	1		6	0		13	.31	12	.29	26,660	24,610
Brush	1	4		3	4		11	1		3	1		18	.43	10	.24	36,900	20,510
Randolph	18	59		68	213		67	54		42	86		195	4.65	412	9.82	400,000	843,900
Lafayette	0	2		4	17		7	0		6	13		17	.41	32	.76	34,860	65,600
Fort	0	2		6	4		3	1		10	1		19	.45	8	.19	38,960	16,410
Trolley Station	0	1		4	1		3	0		0	0		7	.17	2	.05	14,350	4,101
Cadillac Square	1	7		5	10		6	1		29	2		41	.98	20	.48	84,080	41,010

FORT LINE—WESTBOUND—Continued—BOTH DIVISIONS

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Bates	24	4		172	20		135	11		147	10		478	6.46	45	.61	980,000	92,300
Woodward	161	39		567	120		195	25		304	56		1,227	16.58	240	3.24	2,515,000	492,100
Trolley Station	0	0		25	2		0	0		0	0		25	.34	2	.03	51,280	4,101
Griswold	143	23		565	64		117	9		269	37		1,094	14.79	133	1.80	2,242,000	272,600
Trolley Station	0	0		0	0		0	0		3	0		3	.04	0	0	6,153	0
Shelby	23	6		118	22		34	3		46	4		221	2.98	35	.47	453,200	71,780
Wayne	4	1		46	9		12	0		7	6		69	.93	16	.22	141,500	32,810
Cass	3	6		14	15		7	0		8	8		32	.43	29	.39	65,600	59,490
First	3	13		18	21		10	4		3	19		34	.46	57	.77	69,700	116,700
Second	2	11		6	9		6	6		6	0		20	.27	26	.35	41,020	53,300
Third	10	23	8.66	35	107	10.25	18	22	10.5	41	58	8.25	104	1.41	210	2.84	213,100	430,600
Fourth	1	1		13	13		0	0		6	5		20	.27	19	.26	41,020	38,960
Fifth	2	5		0	10		3	1		2	5		7	.09	21	.28	14,350	43,070
Sixth	1	10		4	23		2	2		4	1		11	.15	36	.49	22,560	73,820
Brooklyn	0	7		11	18		4	5		1	5		16	.22	35	.47	32,800	71,750
Eighth	2	10		6	14		6	6		5	6		19	.26	36	.49	38,970	73,820
Trumbull	7	21		15	25		5	3		2	11		29	.39	60	.81	59,490	123,000
Tenth	2	11		6	22		10	4		8	8		26	.35	45	.61	53,300	92,300
Trolley Station	0	6		0	20		1	1		0	0		1	.01	27	.36	12,051	55,360
Trolley Station	1	15		4	25		0	0		0	0		5	.07	40	.54	10,250	82,040
Twelfth	7	31		16	62		11	5		3	7		37	.50	105	1.42	75,880	215,300
Trolley Station	0	1		0	0		0	0		0	0		0	0	1	.01	0	2,051
Vermont	6	5		3	10		4	5		2	6		15	.20	26	.35	30,760	53,300
Fourteenth	1	2		5	24		1	3		7	15		14	.19	44	.59	28,700	90,220
Fifteenth	1	1		5	22		0	6		1	14		7	.09	43	.58	14,350	88,180
Seventeenth	0	2	6.0	1	10	5.12	1	8	5.8	2	10	5.15	4	.05	30	.40	8,204	61,530
Eighteenth	1	4		4	14		3	1		4	6		12	.16	25	.34	24,610	51,280
Nineteenth	7	4		5	21		0	7		8	7		20	.27	39	.52	41,020	79,980
Twentieth	2	1		6	13		5	6		3	17		16	.22	37	.50	32,810	75,880
Twenty-first	6	7		13	18		2	8		13	13		34	.46	46	.62	69,710	94,300
Twenty-second	1	9		11	17		2	11		3	13		17	.23	50	.68	34,860	102,500
Twenty-third	4	22		8	15		2	3		3	14		17	.23	54	.73	34,860	110,700
Twenty-fourth	2	5		12	17		1	10		4	14		21	.28	54	.73	43,070	110,700
W. Gd. Blvd	3	3		11	23		1	10		4	19		17	.23	47	.63	34,860	96,350
Vinewood	1	14		2	5		4	7		5	22		12	.16	48	.65	24,610	98,420
Hubbard	9	2		1	24		5	9		5	14		20	.27	49	.66	41,020	100,400
Scotten	4	23		30	23		15	6		6	17		55	.74	69	.93	112,700	141,500
Trolley Station	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Clark-Fort	18	30	6.25	79	79	5.23	12	30	6.17	42	46	5.9	151	2.04	185	2.50	309,500	379,300

FORT LINE—WESTBOUND—Continued—WOODMERE DIVISION

McKinstry	1	1		6	14		0	6		0	5		7	.17	26	.62	14,350	53,300
Lansing	4	1		0	19		0	8		0	9		4	.10	37	.88	8,204	75,880
Ferdinand	0	1		1	20		0	5		0	5		1	.02	31	.74	2,051	63,580
Morrell	0	1		0	28		5	11		4	19		9	.21	59	1.41	18,460	121,000
Junction	7	2		36	50		6	16		19	36		68	1.62	104	2.48	139,400	213,200
Trolley Station	0	0		0	16		0	1		0	4		0	0	21	.50	0	43,070
Campbell	0	17		7	42		5	25		8	27		20	.48	111	2.64	41,020	227,600
Cavalry	1	1		3	18		0	14		5	30		9	.21	63	1.50	18,460	129,200
Military	2	4	4.0	1	47	4.1	0	17	4.5	1	27	4.27	4	.10	95	2.26	8,204	194,800
Dragoon	1	0		1	15		0	15		1	20		3	.07	50	1.19	6,153	102,500
Artillery	1	2		4	35		0	8		4	14		9	.21	59	1.40	18,460	121,000
Crawford	2	1		3	24		0	16		0	17		5	.12	58	1.38	10,250	118,900
Rademacher	0	3		2	28		2	14		1	17		5	.12	62	1.48	10,250	127,200
Waterman	4	0		3	36		0	12		1	16		8	.19	64	1.52	16,410	131,200
Lewerenz	1	6		1	17		1	13		0	9		3	.07	45	1.07	6,153	92,300
Beard	1	1		1	15		0	9		1	11		3	.07	36	.86	6,153	73,820
Harrington	1	1		0	9		0	5		0	13		1	.02	28	.62	2,051	57,400
Green	0	2		2	21		0	8		1	5		3	.07	36	.86	6,153	73,820
Wheelock	0	3		1	16		0	7		0	13		1	.02	39	.93	2,051	79,980
Solvay	0	1		0	19		1	9		0	9		1	.02	38	.91	2,051	77,910
Central	0	5	3.67	1	20	4.52	0	10	5.5	0	11	5.0	1	.02	46	1.09	2,051	94,320
Glinnan	0	1		0	7		0	0		0	4		0	0	12	.29	0	24,610
Springwells	0	1		1	37		0	21		0	10		1	.02	69	1.64	2,051	141,500
West End	0	5		0	22		0	9		0	4		0	0	40	.95	0	82,040
Govin	0	2		0	13		0	8		0	9		0	0	32	.76	0	65,600
Trolley Station	0	5		0	5		0	3		0	2		0	0	15	.36	0	30,760
Wilkie	0	3		1	10		0	8		0	6		1	.02	27	.64	2,051	55,360
Boyd	0	2		5	23		0	2		0	3		5	.12	30	.71	10,250	61,530
Harbaugh	0	2		17	41		0	31		0	28		17	.40	102	2.43	34,860	208,200
Trolley Station	0	4		0	4		0	0		0	0		0	0	8	.19	0	16,410
Elsmere	0	2		0	34		0	17		0	4		0	0	57	1.36	0	116,800
Trolley Station	0	2		0	4		0	0		0	2		0	0	8	.19	0	16,410
Distel	0	1		0	17		0	6		0	4		0	0	28	.67	0	57,400
Woodmere	0	7		0	34		0	17		0	24		0	0	82	1.95	0	168,100
Trolley Station	0	0		0	6		0	4		0	3		0	0	13	.31	0	26,660
Trolley Station	0	0		0	9		0	0		0	3		0	0	12	.29	0	24,610
Dearborn	0	27	8.33	0	78	9.41	0	39	8.5	0	32	7.27	0	0	176	4.19	0	360,900
Total Woodmere Time			56.16			56.97			57.13			55.14						

FORT LINE—WESTBOUND—Continued—DELRAY DIVISION

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Trolley Sration	1	10		15	25		22	3		9	1		47	1.47	39	1.22	96,350	79,981
W. Jeff.-Clark	5	7		9	8		6	1		6	1		26	.81	17	.53	53,300	34,860
McKinstry	0	0		1	0		0	4		0	1		1	.03	5	.16	2,051	10,250
Summit	1	9		0	5		0	2		0	3		1	.03	19	.60	2,051	38,960
Ferdinand	0	0		1	0		0	0		1	1		2	.06	1	.03	4,102	2,051
Morrell	0	0		1	6		0	2		1	1		2	.06	9	.28	4,102	18,460
Junction	0	0		3	18		0	7		2	9		5	.16	34	1.06	10,250	69,700
Campbell	0	3		10	8		1	4		0	10		11	.34	25	.78	22,560	51,280
Cavalry	0	3	6.4	4	5	6.73	0	6	7.67	1	7	6.34	5	.16	21	.66	10,250	43,070
Military	0	0		2	6		0	0		1	4		3	.09	10	.31	6,153	20,510
Dragoon	0	0		1	7		0	2		5	15		6	.19	24	.74	12,310	49,220
Artillery	1	0		3	3		2	1		8	2		14	.44	6	.19	28,710	12,310
Crawford	2	0		0	6		1	3		0	8		3	.09	17	.53	6,153	34,860
Jerome	0	1		0	7		0	1		3	4		3	.09	13	.41	6,153	26,660
Trolley Station	0	0		0	0		3	4		0	1		3	.09	5	.16	6,153	10,250
Rademacher	2	12		5	14		1	5		2	20		10	.31	51	1.59	20,510	104,600
Waterman	0	0		0	5		1	2		1	8		2	.06	15	.47	4,102	30,760
Schroeder	0	0		2	8		0	3		0	6		2	.06	17	.53	4,102	24,860
Post	0	2		1	12		0	2		0	15		1	.03	31	.97	2,051	63,580
Harrington	1	1		0	8		0	10		0	7		1	.03	26	.81	2,051	53,300
Trolley Station	0	0		0	0		0	0		0	1		0	0	1	.03	0	2,051
Green	1	1		4	9		0	3		3	13		8	.25	26	.81	16,410	53,300
Cottrell	0	1		1	16		0	7		0	6		1	.03	30	.94	2,051	61,530
Solvay	0	7		0	32		0	7		2	13		2	.06	59	1.85	4,102	121,000
Crossley	0	9		2	13		11	4		0	12		13	.41	38	1.19	26,660	77,910
Anderson	0	7	5.6	1	17	5.4	9	4	6.0	2	7	6.0	12	.38	35	1.09	24,610	71,780
Springwells	0	2		0	8		0	2		1	5		1	.03	17	.53	2,051	34,860
West End	1	8		6	35		0	10		4	25		11	.34	78	2.44	22,560	159,900
Cary	0	5		0	12		1	4		1	13		2	.06	34	1.06	4,102	69,700
Moore	0	4		3	17		0	11		5	9		8	.25	41	1.28	16,410	84,080

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FORT LINE—WESTBOUND—Continued—DELRAY DIVISION

Dearborn	2	0		11	21		3	14		8	19		24	.74	54	1.69	49,220	110,700
Trolley Station	0	3		1	10		0	5		0	1		1	.03	19	.60	2,051	38,960
White	0	1		0	3		0	4		1	4		1	.03	12	.38	2,051	24,610
Pulaski	0	10		0	20		0	5		0	3		0	0	38	1.19	0	77,910
Portland	0	5		0	28		0	9		0	12		0	0	54	1.69	0	110,700
Copeland	0	2		0	19		0	7		0	8		0	0	36	1.13	0	73,820
Paterson	0	4	3.8	0	6	4.85	0	4	4.34	0	2	4.44	0	0	16	.50	0	32,810
Home	0	3		0	9		1	7		0	8		1	.03	27	.84	2,051	55,360
Delray	0	7		0	13		0	9		0	4		0	0	33	1.03	0	67,660
Anspach	0	0		0	9		4	2		0	6		4	.13	17	.53	8,204	34,860
Mecca	2	2		1	5		0	2		0	3		3	.09	12	.38	6,153	24,610
River Rouge B'ge	2	7		6	25		10	8		1	10		19	.60	50	1.56	38,960	102,500
Victoria	1	1		5	2		0	0		1	3		7	.22	6	.19	14,350	12,310
Anchor	2	0		1	4		0	3		1	1		4	.13	8	.25	8,202	16,410
Cicotte	0	0		0	12		0	6		1	7		1	.03	25	.78	2,051	51,280
James	0	1		2	19		0	10		0	8		2	.06	38	1.19	4,102	77,910
Riopelle	0	1		1	15		0	12		0	8		1	.03	36	1.13	2,051	73,820
Myrtle	0	3		0	13		0	7		0	6		0	0	29	.90	0	59,490
Henry	0	5		0	23		0	11		0	6		0	0	45	1.40	0	92,290
So. Dearborn	0	20	6.5	0	68	7.07	0	48	7.33	0	38	6.62	0	0	174	5.44	0	356,800
Total Delray Time Totals			22.3			24.05			25.34			23.40	6,060		6,060		12,423,800	12,423,800

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Summary of traffic counts for both divisions

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	82	147	62	98	389
Number of cars observed	9	35	9	21	74
Per cent. of scheduled cars observed	11.0	23.8	14.5	21.4	19.0

NOTE.—Total Delray time is taken from average running time between Clark Street and South Dearborn.
Total Woodmere time is taken from average running time between Baldwin Avenue and Dearborn (taking Woodmere time between Bates and Clark St. where the two lines combine).

NOTE.—The Fort Line being at present principally a loop line no special observations were made through the congested district.

FORT LINE—EASTBOUND—DELRAY DIVISION

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
South Dearborn.	35	0		60	0		37	0		42	0		174	5.44	0	0	376,500	0
Henry	5	0		13	0		10	0		6	0		34	1.06	0	0	73,420	0
Myrtle Trol. S.	3	0		10	0		1	0		2	0		16	.50	0	0	34,570	0
Pleasant	2	0		14	0		6	0		9	0		31	.97	0	0	67,000	0
James	10	0		6	1		3	0		5	0		24	.75	1	.03	51,870	2,161
Cicotte	3	0		9	0		2	0		2	0		16	.50	0	0	34,570	0
Anchor	1	0		3	3		2	1		1	0		7	.22	4	.12	15,130	8,643
Victoria	1	0		2	1		1	1		1	0		5	.16	2	.06	10,800	4,321
River Rouge B'ge	1	0		27	4		17	3		8	2		53	1.66	9	.28	114,800	19,450
Mecca	5	0		4	0		1	0		17	1		27	.84	1	.03	58,330	2,161
Anspach	0	0		1	0		0	0		0	0		1	.03	0	0	2,161	0
Delray	7	0		2	0		7	0		6	0		22	.69	0	0	47,540	0
Home	1	0		9	0		11	1		1	0		22	.69	1	.03	47,540	2,161
Paterson	1	0	7.5	8	0	6.54	3	0	6.8	6	0	6.33	18	.56	0	0	38,900	0
Copeland	1	1		5	0		5	0		6	1		17	.53	2	.06	36,750	4,321
Portland	5	0		4	0		5	1		2	0		16	.50	1	.03	34,570	2,161
Pulaski	1	0		6	0		10	0		4	0		21	.66	0	0	45,320	0
White	3	2		6	1		5	0		2	1		16	.50	4	.12	34,570	8,643
Trolley Station	0	0		1	1		2	0		2	1		5	.16	2	.06	10,800	43,210
Dearborn T. S.	3	0		7	11		5	8		7	10		22	.69	29	.91	47,540	62,700
Moore	3	0		5	0		2	3		7	2		17	.53	5	.16	36,750	10,800
Cary	4	1		8	0		7	0		12	4		31	.97	5	.16	67,000	10,800
West End	5	3		23	5		19	2		19	2		66	2.06	12	.37	142,800	25,940
Springwells T. S.	0	0		11	1		36	2		14	3		61	1.91	6	.18	132,000	12,970
Anderson	3	7	5.0	15	0	5.0	6	0	4.8	13	0	4.7	37	1.16	7	.22	79,980	15,130

FORT LINE—EASTBOUND—Continued—DELRAY DIVISION

Crossley	2	0		10	2		21	2		9	1		42	1.31	5	.16	90,800	10,800
Solvay	0	0		18	0		12	4		8	2		38	1.19	6	.18	82,100	12,970
Cottrell	5	0		3	0		3	1		10	3		21	.66	4	.12	45,310	8,643
Green	2	0		4	3		2	0		6	0		14	.44	3	.09	30,250	6,481
Trolley Station	0	0		3	0		0	0		2	0		5	.16	0	0	10,800	0
Harrington	1	0		0	1		0	0		4	2		5	.16	3	.09	10,800	6,481
Post	2	0		1	1		3	1		3	2		9	.28	4	.12	19,450	8,643
Schroeder	0	0		3	0		0	2		1	1		4	.12	3	.09	8,643	6,481
Waterman	0	0		6	1		0	1		2	4		8	.25	6	.18	17,280	12,970
Rademacher	5	2		9	3		13	1		5	1		32	1.00	7	.22	69,170	15,130
Jerome Trol. S.	1	1		5	0		0	0		9	0		15	.47	1	.03	32,400	2,161
Crawford	4	0		7	2		5	3		3	2		19	.59	7	.22	41,090	15,130
Artillery	1	0		8	2		0	1		3	3		12	.38	6	.19	25,940	12,970
Dragoon	4	0		2	2		2	3		0	0		8	.25	5	.16	17,280	10,800
Military	1	0		3	1		2	2		0	2		6	.19	5	.16	12,970	10,800
Cavalry	3	0	5.0	6	1	5.54	1	1	5.6	4	1	6.2	14	.44	3	.09	30,250	6,481
Campbell	0	2		7	1		6	1		11	2		24	.75	6	.19	51,870	12,970
Junction	2	0		6	1		9	2		4	2		21	.66	5	.16	45,330	10,800
Morrell	0	0		1	2		0	2		0	0		1	.03	4	.12	2,161	8,643
Ferdinand	0	0		0	2		1	0		1	3		2	.06	5	.16	4,321	10,800
Summit	0	0		1	0		0	2		2	0		3	.09	2	.06	6,481	4,321
McKinstry	0	0		0	1		1	0		0	1		1	.03	2	.06	2,162	4,321
Clark-W. Jeff.	2	6		5	4		3	3		3	1		13	.41	14	.44	28,130	30,250
Trolley Station	3	0	6.0	32	12	5.84	3	7	6.4	7	1	5.2	45	1.41	20	.63	97,240	43,210
Total Delray Time			23.5			22.92			21.6			21.8						

FORT LINE—EASTBOUND—Continued—WOODMERE DIVISION

Streets	First Period			Second Period			Third Period			Fourth Period			Total				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Dearborn	2	0		88	0		35	0		23	0		148	3.52	0	0	319,900	0
Trolley Station	7	0		11	0		1	0		0	0		19	.45	0	0	41,080	0
Trolley Station	0	0		1	0		1	0		2	0		4	.09	0	0	8,643	0
Woodmere	8	0		41	0		11	0		21	0		81	1.93	0	0	175,000	0
Distel	4	0		7	0		2	0		5	0		18	.43	0	0	38,900	0
Trolley Station	2	0		2	0		1	0		4	0		9	.21	0	0	19,450	0
Elsmere	1	0		21	0		8	0		15	0		45	1.07	0	0	97,220	0
Trolley Station	9	0		7	1		8	0		0	0		24	.57	1	.02	51,870	21,610
Harbaugh	4	0		30	0		20	0		9	0		63	1.50	0	0	136,000	0
Boyd	0	0		17	0		0	0		4	0		21	.50	0	0	45,370	0
Wilkie	0	0		13	1		2	1		5	1		20	.48	3	.07	43,210	6,481
Trolley Station	0	0		3	0		15	0		4	0		22	.52	0	0	47,540	0
Govin	2	0		15	2		3	0		10	0		30	.71	2	.05	64,810	4,321
West End	3	0		16	2		6	0		5	0		30	.71	2	.05	64,810	4,321
Springwells	5	0		19	0		5	0		16	1		45	1.07	1	.02	97,210	2,161
Glinnan	2	0		2	0		2	0		8	0		14	.33	0	0	30,250	0
Central	1	0	8.0	8	0	8.95	7	1	6.80	9	2	6.85	25	.59	3	.07	54,020	6,481
Solvay	4	0		14	2		6	1		9	0		33	.79	3	.07	71,300	6,481
Wheelock	1	0		16	1		9	0		2	2		28	.67	3	.07	60,500	6,481
Green	3	0		14	0		7	0		9	0		33	.79	0	0	71,300	0
Harrington	0	1		4	1		10	0		3	0		17	.40	2	.05	36,750	4,321
Post	3	0		6	1		6	1		1	0		16	.38	2	.05	34,570	4,321
Beard	0	1		11	1		4	1		6	0		21	.50	3	.07	45,370	6,481
Lewerenz	0	0		2	0		2	0		11	0		15	.36	0	0	32,400	0
Waterman	3	0		22	5		6	2		21	4		52	1.24	11	.26	112,200	23,770
Rademacher	3	0		21	2		6	0		9	0		39	.93	2	.05	84,280	43,210
Crawford	3	0		37	1		14	1		22	2		76	1.81	4	.10	164,200	8,643
Artillery	4	0		27	6		10	5		17	2		58	1.38	13	.31	125,400	28,110
Dragoon	5	0		22	3		6	3		16	2		49	1.17	8	.19	10,570	17,280
Military	2	0	4.67	24	3	4.40	9	2	4.60	5	1	4.53	40	.95	6	.14	86,430	12,970
Cavalry	8	1		13	4		6	2		9	3		36	.86	10	.24	77,800	21,610
Campbell	12	0		53	4		17	2		19	8		101	2.40	14	.33	218,400	30,250
Trolley Station	0	2		4	2		6	2		9	1		19	.45	7	.17	41,070	15,130
Junction	7	3		45	22		22	17		20	11		94	2.24	53	1.26	203,200	114,600
Morrell	11	1		24	2		3	2		18	4		56	1.32	9	.21	121,200	19,450
Ferdinand	2	2		22	3		21	2		14	5		59	1.84	12	.37	127,500	25,940
Lansing	1	0		11	1		12	1		4	2		28	.67	4	.10	60,520	8,643
McKinstry	2	0		13	4		11	6		7	0		33	.79	10	.24	71,320	21,610

FORT LINE—EASTBOUND—Continued—BOTH DIVISIONS

Clark	19	7	3.0	109	47	3.9	24	32	4.5	63	39	4.15	215	2.92	125	1.70	464,700	270,000
Trolley Station	1	1		3	1		2	1		0	0		6	.08	3	.04	12,970	6,481
Scotten	2	2		20	8		16	11		12	5		50	.68	26	.35	108,100	56,200
Campau	7	0		13	5		17	2		6	0		43	.58	7	.09	92,920	15,130
Hubbard	6	0		19	1		6	6		9	6		40	.54	13	.18	86,430	28,100
Vinewood	3	2		20	4		4	4		12	3		39	.53	13	.18	84,300	28,100
West Gr. Blvd	4	0		30	7		4	6		21	4		59	.80	17	.23	127,500	36,750
24th	3	2		8	5		11	3		7	5		29	.39	15	.20	62,680	32,400
23rd	3	1		18	8		60	4		10	1		91	1.23	14	.19	196,700	30,250
22nd	5	0		11	2		16	4		5	3		37	.50	9	.12	79,980	19,450
21st	1	0		27	7		18	1		12	10		58	.78	18	.24	125,200	38,900
20th	3	1		14	3		9	2		6	4		32	.43	10	.14	69,170	21,610
19th	2	0		28	0		11	6		4	7		45	.61	13	.18	97,220	28,100
18th	1	0		9	3		2	2		3	2		15	.20	7	.09	32,400	15,130
17th	0	0	6.36	14	4	3.6	5	4	6.33	4	2	5.08	23	.31	10	.14	49,710	21,610
15th	1	0		15	6		0	3		15	1		31	.42	10	.14	67,000	21,610
14th	1	0		10	7		4	2		6	5		21	.29	14	.19	45,370	30,250
Vermont	1	3		8	4		1	0		2	0		12	.16	7	.09	25,940	15,130
Trolley Station	0	0		4	0		0	0		2	0		6	.08	0	0	12,970	0
12th	0	2		55	17		10	3		1	1		66	.90	23	.31	14,260	49,710
Trolley Station	0	0		16	2		12	0		4	1		32	.43	3	.04	69,170	6,481
Trolley Station	0	1		31	0		8	0		3	0		42	.57	1	.01	90,800	2,161
10th	1	2		23	1		16	7		8	2		48	.65	12	.16	103,700	25,940
Trumbull	1	2		13	5		8	0		9	1		31	.42	8	.11	67,000	17,280
8th	1	2		26	6		12	2		7	1		46	.62	11	.15	99,420	23,770
Brooklyn	0	2		14	4		7	1		3	2		24	.33	9	.12	51,890	19,450
Sixth	2	7		19	6		8	3		5	2		34	.46	18	.24	73,500	38,900
Fifth	0	1		4	4		2	0		3	2		9	.12	7	.09	19,450	15,130
Fourth	0	0		0	2		14	1		6	9		20	.27	12	.16	43,210	25,940
Third	7	5	5.0	125	41	5.55	31	13	5.6	120	29	4.26	283	3.84	88	1.19	611,180	190,000
Second	0	5		8	10		2	3		10	5		20	.27	23	.31	43,210	49,710
First	0	5		7	15		1	3		11	9		19	.26	32	.43	41,070	69,170
Cass	0	10		3	30		1	4		2	13		6	.08	57	.77	12,970	123,200
Wayne	0	10		5	67		10	14		2	7		17	.23	98	1.32	36,750	211,700
Shelby	2	24		19	133		20	49		7	35		48	.65	241	3.26	103,700	520,800
Griswold	6	62		76	416		85	265		52	230		219	2.96	973	13.14	473,200	2,103,000
Woodward	16	98		128	495		109	177		93	266		346	4.67	1,036	14.00	748,200	2,238,000
Bates-Cad. Sq.	11	33		142	199		78	104		134	155		365	4.93	491	6.64	789,300	1,061,000

FORT LINE—EASTBOUND—Continued—WOODMERE DIVISION

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Farmer	6	5		97	34		25	8		46	16		174	4.41	63	1.50	376,200	136,200
Randolph	3	0		65	25		58	10		42	4		168	4.0	39	.93	363,200	84,280
Brush	3	0		9	6		2	2		5	4		19	.45	12	.29	41,070	25,950
Beaubien	0	0		3	7		5	3		2	1		10	.24	11	.26	21,620	23,770
Antoine	2	2	7.66	8	19	8.25	3	9	9.80	8	6	7.81	21	.50	36	.86	45,310	77,800
Hastings	1	2		6	12		2	10		1	5		10	.24	29	.69	21,620	62,700
Rivard	0	1		6	24		1	11		1	6		8	.19	42	1.00	17,280	90,760
Russell	1	3		2	11		1	21		6	17		10	.24	52	1.24	21,610	11,220
Riopelle	0	1		1	13		1	31		2	10		4	.10	55	1.31	8,643	118,800
Orleans	2	2		6	36		0	17		0	21		8	.19	76	1.81	17,280	16,420
Dequindre T. S.	0	7		0	10		0	19		0	6		0	0	42	1.00	0	90,760
St. Aubin	1	2		6	21		3	15		3	13		13	.31	51	1.21	28,100	110,200
Dubois	1	0	5.0	7	26	4.55	2	12	5.33	0	15	4.85	10	.24	53	1.26	21,610	114,600
Chene	1	5		21	51		8	40		7	49		37	.88	145	3.46	79,920	316,900
Trolley Station	0	1		1	7		1	7		0	1		2	.05	16	.38	4,321	34,570
Jos. Campau	3	0		1	30		4	19		10	19		18	.43	68	1.62	38,900	146,900
McDougall	0	1		4	32		0	30		3	36		7	.17	99	2.36	15,130	214,000
Elmwood	3	1		12	32		12	18		2	23		29	.69	74	1.76	62,700	159,800
Trolley Station	0	0		0	1		0	7		1	6		1	.02	14	.33	2,161	30,250
Leib	0	2		3	32		1	11		1	7		5	.12	52	1.24	10,800	112,200
Mt. Elliott	0	1	3.66	5	14	4.56	1	12	4.80	0	16	4.23	6	.14	43	1.05	12,970	92,900
Meldrum	0	1		0	25		1	11		1	28		2	.05	65	1.55	4,321	140,400
Beaufait	0	7		0	14		0	8		0	6		0	0	35	.85	0	75,640
Bellevue	0	3		0	28		0	11		0	20		0	0	62	1.47	0	134,000
Concord	1	4		2	39		0	33		0	22		3	.07	98	2.34	6,481	211,700
Canton	0	2		1	21		0	15		1	19		2	.05	57	1.36	4,321	123,200
Helen	0	0		1	19		4	41		0	15		5	.12	75	1.79	10,800	162,100
East Gr. Blvd.	0	4		0	25		0	12		0	19		0	0	60	1.43	0	129,700
Field	0	4		7	33		0	21		0	15		7	.17	73	1.74	15,130	157,700
Sheridan	0	3		0	19		0	26		0	18		0	0	66	1.57	0	142,600
Townsend	0	0		0	30		0	11		0	19		0	0	60	1.43	0	129,700
Baldwin	0	13	5.66	0	58	5.38	0	33	5.80	0	42	5.76	0	0	146	3.48	0	315,500
Total Woodmere Time			49.01			49.14			53.56			47.52						
Totals													5,757		5,757		12,423,800	12,423,800

Summary of traffic counts for both divisions

	First Period Total	Second Period Total	Third Period Total	Fourth Period Total	GRAND TOTAL
Number of cars scheduled	91	147	65	73	376
Number of cars observed	7	33	11	23	74
Per cent. of scheduled cars observed	7.7	22.4	16.9	31.5	19.7

NOTE.—Total Delray time is taken from average running time between Clark Street and South Dearborn.
Total Woodmere time is taken from average running time between Baldwin Avenue and Dearborn (taking Woodmere time between Bates and Clark Street, where the two lines combine.

NOTE.—The Fort Line being at present principally a loop line, no special observations were made through the congested district.

FOURTEENTH LINE—WESTBOUND—THROUGH DIVISION

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Woodland	97	0		249	0		157	0		117	0		620	7.29	0	0	977,540	0
Englewood	23	0		59	0		1	0		30	0		113	1.33	0	0	187,400	0
Rosedale	9	0		17	0		2	2		13	0		41	.48	2	.02	67,930	3,314
Harmon	7	0		31	0		2	0		13	0		53	.62	0	0	87,800	0
Caniff	0	0		16	0		0	1		10	0		26	.31	1	.01	43,080	1,657
Trowbridge	20	1		25	2		1	0		14	0		60	.71	3	.04	99,431	4,970
Belmont	18	0		8	1		0	0		20	0		46	.54	1	.01	76,220	1,657
Boston Blvd.	4	0		6	0		1	1		8	1		19	.22	2	.02	31,490	3,314
Chicago Blvd.	3	0		14	2		7	0		8	0		32	.38	2	.02	53,020	3,314
Westminster	36	0		42	8		9	7		29	4		116	1.37	19	.22	192,300	31,500
Kenilworth	16	0		19	2		1	1		7	2		43	.51	5	.06	71,260	8,287
Leicester	11	0		14	1		1	0		17	3		43	.51	4	.05	71,260	6,627
Owen	25	0		11	2		1	4		7	6		44	.52	12	.14	72,920	19,884
Josephine	9	0		13	6		2	1		19	1		43	.51	8	.09	71,250	13,260
Holbrook	17	4		42	7		11	0		16	6		86	1.01	17	.20	142,570	28,190
King	11	0		17	2		2	2		9	4		39	.46	8	.09	64,620	13,260
Alger	19	1		30	6		7	0		20	5		76	.89	12	.14	125,920	19,884
Hague	21	0		37	1		1	0		16	3		75	.88	4	.05	124,290	6,627
Philadelphia	23	0		17	1		5	1		10	1		55	.65	3	.04	91,120	4,970
Euclid	18	2		43	3		5	4		26	2		92	1.08	11	.13	152,490	18,235
Melbourn	7	1		12	6		0	0		9	2		28	.33	9	.11	46,400	14,917
Mt. Vernon	7	0		17	3		1	1		7	4		32	.38	8	.09	53,020	13,260
Marston	9	1		10	0		1	0		13	0		33	.29	1	.01	54,680	1,657
Chandler	5	6		1	0		0	1		8	0		14	.16	7	.08	23,200	11,600
Clay	16	12		191	32		10	9		51	21		268	3.15	74	.87	444,187	122,640
Smith	0	0		5	1		0	0		12	0		17	.20	1	.01	28,180	1,657
Bethune	18	6	8.55	27	15	8.05	12	0	7.84	36	1	7.80	93	1.09	22	.26	154,140	36,460
Antoine	3	1		11	0		0	0		9	2		23	.27	3	.04	38,120	4,970
Beaubien	10	2		20	4		9	2		20	4		59	.69	12	.14	97,760	19,880
Horton	3	0		24	3		5	0		29	3		61	.72	6	.07	101,090	9,940

FOURTEENTH LINE—WESTBOUND—Continued—THROUGH DIVISION

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
No. Gr. Blvd. E.	8	3		24	8		15	3		17	4		64	.75	18	.21	106,100	29,835
Milwaukee	8	2		56	6		14	0		20	4		98	1.15	12	.14	162,471	19,890
Trombly	4	1		7	4		0	0		2	0		13	.15	5	.06	21,540	8,288
Piquette	21	31		118	19		48	1		66	7		253	2.97	58	.68	419,347	96,090
Harper	6	18		31	6		5	1		29	3		71	.84	28	.33	117,700	46,390
Medbury	17	1		51	5		8	1		29	2		105	1.24	9	.11	174,000	14,920
Hendrie	17	1		42	10		6	1		33	3		98	1.15	15	.18	162,400	24,870
Palmer	7	4		34	1		2	5		19	6		62	.73	16	.19	102,750	26,513
Ferry	12	1		21	7		0	4		18	5		51	.60	17	.20	84,520	28,190
Kirby	10	1		23	8		2	0		12	14		47	.55	23	.27	77,900	38,130
Frederick	7	8		25	6		0	5		4	5		36	.42	24	.28	59,640	39,780
Farnsworth	5	2		12	11		1	3		4	5		22	.26	21	.25	36,460	34,800
Theodore	10	0		18	5		3	2		9	8		40	.47	15	.18	66,290	24,870

FOURTEENTH LINE—WESTBOUND—Continued—BEAUBIEN BELT

*Initial	19	0		79	0		47	0		9	0		154	1.81	0	0	255,294	0
14th and Warren	10	0		12	0		1	0		2	0		25	.83	0	0	41,429	0
Wabash	10	0		5	2		1	0		2	0		18	.60	2	.07	29,820	3,314
Vermont	10	0		9	6		1	0		0	1		20	.67	7	.23	33,140	11,600
Twelfth	9	0		9	9		4	0		1	2		23	.77	11	.37	38,120	18,230
Avery	2	1		9	1		0	4		1	1		12	.40	7	.23	19,880	11,600
Commonwealth	3	0		7	1		4	0		0	0		14	.47	1	.03	23,200	1,657
Trumbull	25	0		26	3		7	1		7	2		65	2.17	6	.20	107,700	9,940
Lincoln	5	0		7	3		2	6		1	0		15	.50	9	.30	24,870	14,920
Brooklyn	8	0		10	5		0	3		0	2		18	.60	10	.33	29,830	16,573
Greenwood	11	4		19	7		4	3		3	2		37	1.23	16	.53	61,320	26,510
Grant Ct.	1	0		0	1		1	0		0	0		2	.07	1	.03	3,314	1,657
Fourth	6	0		3	2		0	0		1	0		10	.33	2	.07	16,573	3,314
Third	13	2		23	3		6	7		9	0		51	1.68	12	.40	84,520	19,880
Second	0	2		7	1		2	0		0	4		9	.30	7	.23	14,910	11,600
Trolley Station	0	0		0	0		0	0		0	0		0	0	0	0	0	0

* These passengers boarded the belt line before reaching 14th and Warren.

FOURTEENTH LINE—WESTBOUND—Continued—BEAUBIEN BELT

Cass	1	11		29	14		2	5		1	0		33	1.10	30	1.00	54,700	49,720
Woodward	6	77		42	76		61	12		6	16		115	3.83	181	6.04	190,650	300,000
John R.	0	0		4	1		0	0		0	0		4	.13	1	.03	6,628	1,657
Brush	0	0		3	6		1	1		0	1		4	.13	8	.27	6,628	13,258

FOURTEENTH LINE—WESTBOUND—Continued—BOTH DIVISIONS

Warren	35	34	7.00	84	97	7.49	17	66	7.17	44	41	6.58	180	1.56	238	2.07	298,350	394,550
Hancock	5	3		26	8		0	3		14	6		45	.39	20	.17	74,590	33,140
Forest	137	48	1.40	222	176	1.15	41	52	1.40	71	196	1.30	471	4.10	472	4.11	780,487	782,240
Garfield	7	1		21	7		3	5		10	3		41	.36	16	.14	79,950	26,510
Canfield	14	2		37	6		6	4		14	16		71	.62	28	.24	117,700	46,400
Willis	14	1		24	10		4	5		8	6		50	.44	22	.19	82,870	36,450
Superior	8	3		18	9		3	4		5	4		34	.30	20	.17	56,360	33,140
Alexandrine	9	4		26	11		5	5		15	7		55	.48	27	.23	91,130	44,740
Leland	13	3		12	15		2	4		14	13		41	.36	35	.30	67,956	57,995
Illinois	8	4		18	17		3	10		0	5		29	.25	36	.31	48,050	59,630
Livingstone	15	25		27	21		6	15		9	9		57	.50	70	.61	94,470	116,120
Rowena	29	12		40	19		4	5		19	6		92	.80	42	.36	152,500	69,540
Eliot	14	6		25	12		3	8		6	7		48	.42	33	.29	79,570	54,685
Benton	13	1		23	17		3	7		12	8		51	.44	33	.29	84,500	54,685
Erskine	19	4		14	22		5	13		10	14		48	.42	53	.46	79,570	87,800
Watson	23	6		29	23		10	13		11	10		73	.64	52	.45	121,000	86,170
Wilkins	15	2		23	19		2	8		10	17		50	.43	46	.40	82,870	76,220
Brewster	14	7		20	12		14	11		8	9		56	.49	39	.34	92,800	64,615
Alfred	15	4		26	15		6	6		10	8		57	.50	33	.29	94,470	54,685
Division	12	6	6.05	13	24	5.82	2	18	6.20	7	7	5.14	34	.30	55	.48	56,360	91,177

FOURTEENTH LINE—WESTBOUND—Continued—BOTH DIVISIONS

Streets	First Period			Second Period			Third Period			Fourth Period			Total				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Adelaide	7	11		35	13		2	13		2	18		46	.40	55	.48	76,220	91,130
Winder	12	12		16	22		2	12		9	6		39	.34	52	.45	64,620	86,180
Napoleon	1	3		17	20		1	1		7	3		26	.23	27	.24	43,090	44,660
High	4	5		16	29		4	8		15	17		39	.34	59	.51	64,620	97,790
Montcalm	3	8		11	22		5	6		7	11		26	.23	47	.41	43,090	77,900
Columbia	3	8		7	13		1	3		9	6		20	.17	30	.26	33,150	49,720
Elizabeth	1	4		6	5		0	13		8	12		15	.13	34	.30	24,860	56,350
Adams	6	32		16	63		25	18		6	23		53	.46	136	1.18	87,837	225,400
Brush	5	8		10	25		7	7		9	10		31	.27	50	.43	51,380	82,850
Randolph	1	5		12	9		4	0		2	6		19	.17	20	.17	31,490	33,140
John R	1	10		13	10		21	1		2	8		37	.32	29	.25	61,300	48,050
Trolley Station	0	2		1	5		0	0		2	2		3	.03	9	.08	4,977	14,920
Witherell	1	17	4.25	9	39	4.38	5	2	4.08	13	18	4.09	28	.24	76	.66	46,400	126,000
Madison	1	17		4	33		4	1		0	8		9	.08	59	.51	14,920	97,790
Broadway	0	37		6	24		0	2		8	11		14	.12	74	.64	23,200	122,650
John R	2	37		8	62		2	4		7	14		19	.17	117	1.02	31,490	193,900
Gr. River	0	52	5.45	28	75	5.86	20	4	5.92	16	13	5.79	64	.56	144	1.25	106,110	238,700
Gratiot	29	119		95	324		61	98		121	216		306	2.66	757	6.60	507,097	1,255,100
Library	1	22		25	55		5	2		14	22		45	.39	101	.88	74,580	167,400
Farmer	11	43		97	217		61	11		62	32		231	2.01	303	2.64	382,800	502,200
Woodward	13	135		181	277		90	25		154	108		438	3.81	545	4.75	725,935	903,000
Griswold	34	181		263	264		105	35		132	98		534	4.65	578	5.02	885,000	957,628
Gr. River	11	13		57	34		26	11		50	8		144	1.26	66	.58	238,700	109,400
Clifford	6	3		21	19		13	2		12	1		52	.46	25	.22	86,180	41,426
Washington Blv.	4	7		49	43		19	6		39	17		111	.98	73	.64	184,000	121,000
Park	1	4		15	5		2	0		7	11		25	.22	20	.18	41,435	33,140
Bagley	1	13		22	4		2	4		13	1		38	.33	22	.19	63,000	36,470
Middle	3	1		6	4		1	0		6	5		16	.14	10	.08	26,520	16,573
Adams	1	1		11	11		6	2		11	5		29	.25	19	.17	48,050	31,490
Elizabeth	1	1		9	9		6	3		14	9		30	.26	22	.19	49,720	36,470

FOURTEENTH LINE—WESTBOUND—Continued—BOTH DIVISIONS

Columbia	2	5		6	6		0	6		5	5		13	.11	22	.19	21,550	36,470
Montcalm	2	1		4	18		3	3		2	13		11	.10	35	.31	18,231	58,000
High	4	8		8	14		1	2		1	16		14	.12	40	.35	23,200	66,280
Duffield	1	3		12	7		5	9		29	9		47	.41	44	.39	77,900	72,920
Henry	6	5		15	13		3	9		9	17		23	.29	44	.39	54,690	72,920
Sibley	1	5		5	17		1	11		2	15		9	.08	48	.42	14,920	79,550
Sproat	5	2		7	13		0	7		1	7		13	.11	29	.25	21,550	48,050
Bagg	1	7	4.94	8	26	4.58	3	16	4.83	43	32	4.39	55	.48	81	.71	91,120	134,250
Second, East	0	3		3	16		0	2		6	12		9	.08	34	.30	14,920	56,330
Second, North	4	4		1	22		0	21		5	26		10	.09	73	.64	16,573	121,100
Second, West	2	1		0	5		0	4		1	7		3	.03	17	.15	4,970	28,180
Third	8	5		24	35		8	31		6	49		46	.40	120	1.04	76,220	198,900
Fourth	1	3		0	15		0	3		0	8		1	.01	29	.25	1,657	48,050
Fifth	0	0		2	3		0	5		1	6		3	.03	14	.12	4,970	23,200
Greenwood	1	3		6	29		2	9		9	18		18	.16	59	.52	29,820	97,800
Gr. River	5	6		13	18		11	9		21	18		50	.44	51	.45	82,850	84,520
Sixth	0	1		1	2		0	0		1	1		2	.18	4	.04	3,314	6,620
Brooklyn	1	2		9	20		4	4		1	16		15	.13	42	.37	24,870	69,600
Trolley Station	0	0		0	5		0	1		2	3		2	.18	9	.08	3,314	14,920
Trumbull	3	6		22	34		6	20		11	11		42	.37	71	.62	69,600	117,600
National	3	2		5	9		1	12		2	12		11	.10	35	.31	18,231	58,000
Harrison	5	0		9	26		3	10		7	15		24	.21	51	.45	38,780	84,500
Twelfth	3	4		13	34		1	9		9	28		26	.23	75	.66	43,090	124,250
Vermont	3	3		5	19		0	7		17	31		25	.22	60	.53	41,420	99,450
Wabash	1	3		6	11		0	5		2	15		9	.08	34	.30	14,920	56,350
Fourteenth	33	10	6.50	42	54	6.04	33	11	6.00	29	19	5.98	137	1.20	94	.83	227,200	155,850
Butternut	11	2		3	16		0	13		6	14		20	.18	45	.39	33,140	74,580
Ash	7	4		9	25		0	34		9	11		25	.22	74	.64	41,420	122,684
Myrtle	22	6		23	30		4	7		32	18		81	.71	61	.54	134,200	101,100
Magnolia	12	1		20	19		3	15		7	18		42	.37	53	.47	69,600	87,800

FOURTEENTH LINE—WESTBOUND—Continued—BOTH DIVISIONS

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Linden	12	4		10	27		4	18		18	32		44	.39	81	.71	72,920	134,250
Poplar	7	7		10	35		1	11		3	14		21	.18	67	.59	34,800	111,100
Buchanan	5	4		8	25		2	18		2	28		17	.15	75	.66	28,180	124,250
Breckenridge	0	0		0	2		0	0		0	0		0	0	2	.18	0	3,314
Grand River	3	20		20	55		2	18		15	40		40	.35	133	1.16	66,280	220,400
Forest	32	9	4.69	123	62	5.16	29	38	5.20	111	42	4.67	295	2.57	151	1.31	488,900	250,284
Hancock	3	7		3	17		0	10		3	2		9	.08	36	.31	14,915	59,658
Warren	16	51	1.25	33	101	1.33	4	12	1.50	32	66	1.30	85	.74	230	2.00	140,900	381,184
†Final	0	28		0	69		0	49		0	15		0	0	161	1.89	0	266,956

FOURTEENTH LINE—WESTBOUND—Continued—THROUGH DIVISION

Putnam	1	2		1	15		0	0		0	7		2	.02	24	.28	3,315	39,780
Merrick	0	3		3	18		1	2		0	6		4	.05	29	.34	6,630	48,050
Kirby	0	4		0	38		0	9		1	14		1	.01	65	.76	1,657	107,700
Hudson	0	4		1	19		0	8		0	16		1	.01	47	.55	1,657	77,900
Stanley	0	11		0	40		0	20		0	53		0	0	124	1.46	0	205,482
Antoinette	0	6		0	68		0	15		0	43		0	0	132	1.55	0	218,800
McGraw	0	6		0	56		0	20		0	54		0	0	136	1.60	0	225,382
Marquette	0	11		0	57		0	13		0	38		0	0	119	1.40	0	197,200
Hughes Ct.	0	2		0	10		0	1		0	8		0	0	21	.25	0	34,800
Milwaukee	0	67	4.80	0	185	4.93	0	58	5.17	0	175	4.68	0	0	485	5.70	0	803,890
Total			54.88			54.79			55.31			51.72	9,324		9,324		15,453,000	15,453,000

† These passengers left on belt line cars at 14th and Warren.

FOURTEENTH LINE—WESTBOUND

Traffic count for congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	841	0		789	0		303	0		1,933	41.12	0	0
Adams	3	17		12	10		2	4		17	.36	31	.66
Madison	0	23		4	19		5	4		9	.19	46	.98
Broadway	0	40		0	13		0	4		0	0	57	1.21
John R.	0	37		3	27		6	12		9	.19	76	1.61
Grand River	7	53		13	36		29	13		49	1.04	102	2.17
Gratiot	53	113		47	111		90	90		190	4.04	314	6.68
Library	3	38		14	30		10	12		27	.57	80	1.7
Farmer	5	46		60	123		74	34		139	2.96	203	4.32
Woodward	5	118		70	146		97	24		172	3.66	288	6.12
State	0	0		0	0		0	0		0	0	0	0
Griswold	67	189		146	182		176	42		389	8.27	413	8.78
Grand River	9	20		22	13		14	6		45	.96	39	.83
Clifford	2	19		14	10		4	0		20	.42	29	.62
Washington	10	16	7.31	15	17	7.34	9	1	7.50	34	.72	34	.72
Final		276			472			573				1,321	28.1

Summary of traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	119	198	87	125	529
Number of cars observed	34	75	20	33	162
Per cent. of scheduled cars observed	28.6	37.9	23.0	26.4	30.6

FOURTEENTH LINE—EASTBOUND—THROUGH DIVISION

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Milwaukee	98	0		185	0		185	0		128	0		596	7.19	0	0	848,000	0
Hughes Ct.	15	0		9	0		8	1		20	0		52	.63	1	.01	73,985	1,423
Marquette	16	0		39	1		46	0		35	0		136	1.64	1	.01	193,600	1,423
McGraw	25	0		59	0		31	0		50	0		165	1.99	0	0	234,820	0
Antoinette	29	0		49	1		18	0		31	1		127	1.53	2	.02	180,685	2,846
Stanley	20	0		30	0		24	0		32	0		106	1.28	0	0	150,780	0
Hudson	13	0		28	1		12	1		12	0		65	.78	2	.02	92,485	2,846
Kirby	7	0		28	0		13	1		5	0		53	.64	1	.01	75,458	1,423
Merrick	4	0		10	1		3	0		6	0		23	.28	1	.01	32,720	1,423
Putnam	4	0		6	0		1	0		0	0		11	.13	0	0	15,605	0
Warren	37	35	5.43	106	71	4.52	26	130	4.67	62	86	4.52	231	2.78	322	3.88	328,820	458,380
Hancock	3	0		7	1		2	0		4	0		16	.19	1	.01	22,761	1,423

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FOURTEENTH LINE—EASTBOUND—Continued—BOTH DIVISIONS

*Initial	0	0		80	0		61	0		14	0		155	4.84	0	0	220,600	0
Forest & Gr. R.	49	29	2.18	142	77	2.24	63	50	2.04	102	60	2.31	356	3.09	216	1.88	507,120	260,400
Breckenridge	22	4		45	7		15	5		19	4		101	.88	20	.17	143,760	28,460
Buchanan	15	0		36	9		10	8		21	5		82	.71	22	.19	116,750	31,307
Poplar	15	2		55	9		4	16		11	11		85	.74	38	.33	121,090	54,130
Linden	17	1		47	17		5	15		24	18		93	.81	51	.44	132,505	72,648
Magnolia	10	4		25	4		5	9		9	18		49	.43	35	.30	69,735	49,844
Myrtle	20	6		55	18		11	34		23	26		109	.95	84	.73	155,270	119,480
Ash	12	2		37	11		9	17		10	13		68	.59	43	.37	96,810	61,220
Butternut	10	2		35	10		6	9		12	13		63	.55	34	.30	89,675	48,437
Bagg	22	1		44	10		7	9		24	8		97	.84	28	.24	138,120	39,880
Perry	4	1		15	6		4	7		6	5		29	.25	19	.17	41,275	27,051
Pine	4	1		9	4		3	4		6	4		22	.19	13	.11	31,307	18,500
Locust	13	72	9.07	17	37	9.41	12	42	9.58	23	30	9.36	65	.57	190	1.65	92,528	270,410
Wabash	6	1		11	8		1	6		4	11		22	.19	26	.23	31,307	37,022
Vermont	3	2		24	8		0	5		14	9		41	.36	24	.21	58,340	34,160

* These passengers boarded the belt line cars before reaching Forest and Grand River.

FOURTEENTH LINE—EASTBOUND—Continued—BOTH DIVISIONS

Twelfth	7	5		48	4		5	3		16	3		76	.66	15	.13	108,180	21,342
Harrison	4	1		30	8		8	6		4	1		46	.40	16	.14	65,490	22,775
National	3	3		10	5		2	1		3	1		18	.16	10	.09	25,612	14,234
Trumbull	7	1		65	14		10	10		20	9		102	.89	34	.30	145,270	48,437
Trolley Station	1	0		2	2		1	0		0	1		4	.03	3	.03	5,694	4,270
Brooklyn	3	10		21	4		8	2		10	6		42	.37	22	.19	59,778	31,307
Sixth	3	5		13	10		4	2		11	3		31	.27	20	.17	44,120	28,461
Fifth	7	4		5	4		2	7		1	3		15	.13	18	.16	21,392	25,612
Fourth	4	3		8	8		10	8		2	1		24	.21	20	.17	34,150	28,461
Gr. River	6	12		26	31		21	14		14	24		67	.58	81	.70	95,360	115,280
Third	2	6		2	6		3	1		2	3		9	.08	16	.14	12,815	22,768
Second	5	1		22	1		4	1		4	9		35	.30	12	.10	49,802	17,075
Cass	11	6		27	14		7	3		11	14		56	.49	37	.32	79,720	52,650
Clifford	18	10		44	26		7	5		20	13		89	.65	54	.47	126,610	76,835
Duffield	1	1		10	8		2	2		7	4		20	.17	15	.13	28,485	21,342
High	2	1		20	5		5	1		2	10		29	.25	17	.15	41,280	24,190
Montcalm	0	1		7	1		2	4		7	4		16	.14	10	.09	22,768	14,234
Columbia	0	1		7	7		1	0		1	6		9	.08	14	.12	12,815	19,930
Elizabeth	4	5		9	5		0	4		4	3		17	.15	17	.15	24,190	24,190
Adams	0	6		6	13		4	4		2	3		12	.10	26	.23	17,075	36,995
Middle	0	0		1	5		0	0		0	1		1	.01	6	.05	1,423	8,540
Bagley	0	5		1	8		2	2		2	3		5	.04	18	.16	7,113	25,612
Park	1	5		3	16		3	1		1	7		8	.07	29	.25	11,385	41,280
Washington Blv.	0	9	4.20	11	56	4.59	9	5	4.19	17	22	4.90	37	.32	92	.80	52,665	130,920
Griswold	0	33		13	119		8	13		3	16		24	.21	181	1.57	34,150	257,580
Gr. River	2	28		19	129		17	14		9	33		47	.41	204	1.75	66,875	290,280
State	11	58		70	210		52	51		17	93		150	1.30	412	3.58	213,660	586,100

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FOURTEENTH LINE—EASTBOUND—Continued—HASTINGS BELT

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Griswold	0	1		25	24		10	3		0	0		35	1.09	28	.87	49,800	39,895
Woodward	1	3		54	35		30	1		8	10		93	2.91	49	1.53	132,430	69,770
Farmer	2	13		34	38		25	3		6	1		67	2.09	55	1.72	95,350	78,233
Trolley Station	0	0		0	0		3	0		0	0		3	.09	0	0	4,270	0
Library	0	0		12	6		0	0		0	0		12	.37	6	.19	17,075	8,538

FOURTEENTH LINE—EASTBOUND—Continued—THROUGH DIVISION

Michigan	20	24		47	75		22	33		14	56		107	1.28	188	2.26	152,416	268,500
Lafayette Blvd.	8	20		22	39		16	13		10	12		56	.67	84	1.00	79,690	119,575
Fort	9	44		23	88		24	21		11	22		67	.81	175	2.10	95,360	249,000
Congress	0	29		7	31		2	7		7	9		16	.19	76	.92	22,768	108,210
Larned	2	19		15	24		11	17		4	1		32	.39	61	.74	45,530	86,805
Jefferson	0	14	6.40	15	21	5.83	2	11	6.58	4	9	5.38	21	.25	55	.66	29,890	78,261
Gris. and Jeff.	0	16		23	30		17	10		3	9		43	.51	65	.78	61,175	92,520
Woodbridge	1	4		6	14		6	13		1	7		14	.17	38	.46	19,919	54,113
Woodward	2	8		26	46		10	16		11	10		49	.59	80	.96	69,740	113,835
Bates & Woodbr.	15	5		18	5		22	1		14	4		69	.83	15	.18	98,320	21,351
Jefferson	34	0		61	2		24	0		27	1		146	1.76	3	.04	207,850	4,270
Larned	21	1		27	2		15	0		25	0		88	1.06	3	.04	125,250	4,270
Congress	7	1		43	1		7	1		25	1		82	.99	4	.05	116,825	5,696
Cadillac Sq.	48	1		85	6		52	0		46	4		231	2.78	11	.13	328,800	15,651
Farmer	36	2		63	11		35	0		42	2		176	2.12	15	.18	250,470	21,350
Monroe	34	7		100	18		56	3		128	2		318	3.83	30	.36	452,580	42,691
Gratiot	42	4		185	28		79	6		130	20		436	5.26	58	.70	620,610	82,545
Library	10	1		39	5		9	0		47	3		105	1.26	9	.11	149,465	12,840

FOURTEENTH LINE—EASTBOUND—Continued—BOTH DIVISIONS

Broadway	39	4		182	42		68	6		123	1		412	3.58	53	.46	587,058	75,420
Grand R. E.	8	3		102	13		40	2		45	5		195	1.70	23	.20	277,580	32,730
John R.	6	2		47	20		19	4		20	3		92	.80	29	.25	130,920	41,282
Witherell	8	4	9.20	26	13	9.44	12	3	10.85	23	15	9.34	69	.60	35	.30	98,168	49,800
Madison	5	0		6	2		9	2		12	4		32	.28	8	.07	45,521	11,381
Adams	2	3		28	8		7	2		20	12		57	.50	25	.22	81,085	35,575
Trolley Station	4	1		3	0		0	0		2	3		9	.08	4	.03	12,813	5,696
John R.	5	4		6	14		4	1		1	3		16	.14	22	.19	22,771	31,300
Randolph	0	0		3	4		3	3		4	2		10	.09	9	.08	14,234	12,813
Brush	7	2		33	16		8	1		11	5		59	.51	24	.21	83,955	34,165
Beaubien	10	2		60	10		5	2		8	6		83	.72	20	.17	118,200	28,465
Antoine	7	1		36	20		3	4		34	9		80	.70	34	.30	113,912	48,380
Hastings	64	15		155	44		42	16		133	20		394	3.42	95	.83	560,600	135,320
Elizabeth	3	1		15	10		2	2		12	5		32	.28	18	.16	45,521	25,620
Columbia	7	1		14	17		5	8		7	9		33	.29	35	.30	46,950	49,800
Montcalm	10	4		18	31		3	7		20	12		51	.44	54	.47	72,545	76,830
High	8	1		25	26		7	6		42	15		82	.71	48	.42	116,825	68,315
Napoleon	3	1		24	47		1	20		12	26		40	.35	94	.82	56,972	133,920
Winder	16	5		27	49		6	14		17	30		66	.57	98	.85	93,905	139,570
Adelaide	6	6		27	35		8	17		23	20		64	.56	78	.68	91,050	110,985
Division	10	2	5.57	23	33	5.52	2	3	5.72	19	21	5.45	54	.47	59	.51	76,813	83,965
Alfred	13	3		30	45		4	26		24	32		71	.62	106	.92	101,100	150,850
Brewster	8	1		11	25		1	9		17	21		37	.32	56	.49	52,610	79,675
Wilkins	6	7		20	15		2	6		11	10		39	.34	38	.33	55,408	54,060
Watson	29	5		18	43		3	24		8	20		58	.50	92	.80	82,550	131,020
Erskine	18	5		25	45		4	14		8	20		55	.48	84	.73	78,293	119,570
Benton	11	4		21	45		3	14		16	22		51	.44	85	.74	72,590	121,000
Eliot	21	7		13	27		3	15		8	20		45	.39	69	.60	64,100	98,350
Rowena	23	8		12	29		7	18		17	39		59	.51	94	.82	83,950	133,850
Brady	27	3		20	37		8	29		4	12		59	.51	81	.70	83,950	115,550

FOURTEENTH LINE—EASTBOUND—Continued—BOTH DIVISIONS

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Livingstone	19	3		16	33		2	13		7	18		44	.38	67	.58	62,615	95,385
Illinois	24	2		16	21		5	14		5	17		50	.44	54	.47	71,275	76,350
Leland	10	3		10	23		4	14		15	17		39	.34	57	.50	55,520	81,140
Alexandrine	15	4		17	33		0	17		5	19		37	.32	73	.63	52,636	103,893
Superior	14	1		20	15		2	9		0	11		36	.31	36	.31	51,215	51,339
Willis	2	3		6	22		2	12		6	13		16	.14	50	.44	22,795	71,375
Canfield	8	8		10	30		2	23		14	18		34	.29	79	.69	48,400	112,800
Garfield	1	2		4	21		0	17		4	4		9	.08	44	.38	12,810	62,620
Forest & Hast.	232	150	5.65	184	223	6.12	85	54	6.43	149	127	5.68	650	5.65	554	4.82	925,216	787,528

FOURTEENTH LINE—EASTBOUND—Continued—HASTINGS BELT

Antoine	8	1		16	18		0	0		45	5		69	2.16	24	.76	98,200	34,155
Beaubien	13	0		27	14		1	0		35	18		76	2.38	32	1.00	108,220	45,540
Brush	0	0		5	19		0	0		10	18		15	.47	37	1.16	21,350	52,650
John R	0	0		5	15		0	0		13	2		18	.56	17	.53	25,608	24,195
Woodward	8	26		122	32		8	7		66	12		204	6.38	77	2.41	290,400	109,720
Cass	0	2		13	7		0	2		0	1		13	.41	12	.38	18,500	17,080
Second	0	0		3	10		0	2		0	7		3	.09	19	.59	4,269	27,046
Third	3	3		29	21		2	2		12	15		46	1.44	41	1.28	65,485	58,330
Fourth	0	0		0	6		0	0		0	6		0	0	12	.38	0	17,080
Greenwood	1	9		4	26		1	6		6	26		12	.38	67	2.09	17,085	95,373
Sixth	0	1		3	8		0	0		0	4		3	.09	13	.41	4,269	18,500
Brooklyn	0	0		9	6		1	1		0	8		10	.31	15	.47	14,234	21,350
Lincoln	1	0		4	11		0	1		1	14		6	.19	26	.81	8,539	37,000
Trumbull	1	3		9	29		1	4		11	15		22	.69	51	1.59	31,300	72,580
Commonwealth	2	1		7	9		1	1		0	5		10	.31	16	.50	14,234	22,772
Avery	1	0		4	7		0	1		1	12		6	.19	20	.63	8,539	28,468
Twelfth	2	3		4	19		1	4		0	11		7	.22	37	1.16	9,963	52,650
Vermont	0	1		0	8		0	0		1	5		1	.03	14	.44	1,423	19,928
Wabash	0	1		0	3		0	0		0	1		0	0	5	.16	0	7,117
Fourteenth	0	34		13	117		0	5		1	77		14	.44	233	7.28	19,928	331,675
†Final	0	74		0	45		0	2		0	0		0	0	121	3.78	0	172,267

† These passengers left on belt line cars at Forest and 14th.

FOURTEENTH LINE—EASTBOUND—Continued—THROUGH DIVISION

Hancock	1	7		4	10		2	2		6	34		13	.16	53	.64	18,505	75,445
Warren	19	9	1.33	1	38	.95	0	5	1.35	10	34	1.15	30	.36	86	1.04	42,705	122,450
Theodore	4	8		8	38		0	11		1	33		13	.16	90	1.08	18,505	128,110
Farnsworth	3	6		15	32		0	8		9	33		27	.32	79	.95	38,430	112,500
Frederick	2	3		11	23		0	7		2	27		15	.18	60	.72	21,350	85,410
Kirby	1	3		9	23		1	10		5	35		16	.19	71	.85	22,775	101,007
Ferry	4	3		17	16		0	16		7	33		28	.34	68	.82	39,850	96,800
Palmer	4	3		15	37		1	6		6	17		26	.31	63	.76	37,014	89,633
Osborne	1	2		0	9		0	3		2	6		3	.04	20	.24	4,270	28,475
Hendrie	5	10		4	33		0	10		3	32		12	.14	85	1.02	17,085	121,000
Medbury	2	8		5	31		1	9		6	39		14	.17	87	1.05	19,930	123,825
Harper	2	56		8	28		5	9		4	10		19	.23	103	1.24	27,050	146,625
Piquette	5	45		25	27		6	6		6	18		42	.51	96	1.15	59,780	136,656
Oakland	1	46		3	17		1	2		0	5		5	.06	70	.84	7,125	99,645
Antoine	0	31		7	10		0	1		0	4		7	.08	46	.55	9,965	65,455
Beaubien	8	43		42	35		15	9		22	18		87	1.05	105	1.27	123,825	149,465
Trombly	2	4		5	4		0	0		0	0		7	.08	8	.09	9,965	11,385
Milwaukee	5	18		10	21		6	11		2	14		23	.28	64	.77	32,750	91,100
No. Gr. Blvd. E.	3	18		3	16		1	3		6	11		13	.16	48	.58	18,500	68,330
Horton	2	2		2	20		1	8		2	9		7	.08	39	.47	9,965	55,530
Custer	1	0		1	7		0	1		0	14		2	.02	22	.27	2,845	31,391
Bethune	8	4		4	24		1	10		2	12		15	.18	50	.60	21,345	71,250
Antoine	0	3		0	15		0	6		1	10		1	.01	34	.41	1,423	48,450
Oakland	3	6	8.0	16	24	8.13	5	20	8.58	4	30	7.80	28	.34	80	.97	39,833	113,950
Clay and Smith	33	67		39	112		38	34		15	70		125	1.51	283	3.41	177,950	401,834
Chandler	0	1		0	3		0	4		1	5		1	.01	13	.16	1,423	18,510
Marston	3	3		9	13		1	4		0	3		13	.16	23	.28	18,510	32,770
Mt. Vernon	2	5		1	14		0	15		0	16		3	.04	50	.60	4,269	71,250
Melbourne	1	5		3	24		1	8		1	18		6	.07	55	.66	8,532	78,370
Euclid	12	9		2	35		2	9		2	31		18	.22	84	1.01	25,602	119,610
Philadelphia	2	6		3	28		0	4		2	27		7	.08	65	.78	9,961	92,700
Hague	4	6		4	25		0	10		2	19		10	.12	60	.72	14,235	85,490
Alger	1	5		4	26		0	17		0	19		5	.06	67	.81	7,119	95,350
King	1	5		0	8		0	5		1	21		2	.02	39	.47	2,845	55,560
Holbrook	9	29		11	37		0	9		5	20		25	.30	95	1.15	35,652	135,423

FOURTEENTH LINE—EASTBOUND—Continued—THROUGH DIVISION

Streets	First Period Passengers On	First Period Passengers Off	First Period Time Min.	Second Period Passengers On	Second Period Passengers Off	Second Period Time Min.	Third Period Passengers On	Third Period Passengers Off	Third Period Time Min.	Fourth Period Passengers On	Fourth Period Passengers Off	Fourth Period Time Min.	TOTAL Passengers On Total	TOTAL Passengers On Av. per car	TOTAL Passengers Off Total	TOTAL Passengers Off Av. per car	Annual Passengers, 1913 Prorated as per Count On	Annual Passengers, 1913 Prorated as per Count Off
Josephine	7	2		2	31		0	10		0	11		9	.11	54	.65	12,810	76,830
Owen	10	3		1	23		0	14		3	24		14	.17	64	.77	19,910	91,180
Leicester	1	1		3	9		0	12		1	13		5	.06	35	.42	7,119	49,810
Kenilworth	2	3		0	16		0	15		1	19		3	.04	53	.64	4,269	75,490
Westminster	11	9		6	31		0	20		5	20		22	.27	80	.97	31,291	113,750
Chicago Blvd	1	5		1	13		0	6		1	11		3	.04	35	.42	4,269	49,210
Boston Blvd	2	7		0	16		0	8		0	18		2	.02	49	.59	2,842	69,770
Lynn	0	3		0	5		0	5		0	8		0	0	21	.25	0	29,895
Trowbridge	0	2		0	7		0	2		0	10		0	0	21	.25	0	29,895
Caniff	2	19		1	14		0	16		0	12		3	.04	61	.74	4,269	86,910
Harmon	0	9		0	8		0	2		0	3		0	0	22	.27	0	31,391
Rosedale	0	1		0	15		0	8		0	16		0	0	40	.48	0	56,940
Englewood	0	8		0	13		0	8		0	11		0	0	40	.48	0	56,940
Woodland	0	309	8.55	0	290	8.20	0	75	9.08	0	125	7.84	0	0	799	9.63	0	1,137,217
Total			65.58			64.95			69.07			63.73	10,856		10,856		15,453,000	15,453,000

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FOURTEENTH LINE—EASTBOUND

Traffic count in congested district

Streets	First Period Passengers On	First Period Passengers Off	First Period Time Min.	Second Period Passengers On	Second Period Passengers Off	Second Period Time Min.	Third Period Passengers On	Third Period Passengers Off	Third Period Time Min.	TOTAL Passengers On	TOTAL Passengers On Av. per car	TOTAL Passengers Off	TOTAL Passengers Off Av. per car
Initial	482	0		503	0		125	0		1,110	22.65	0	0
Washington	0	25		10	25		0	3		10	.20	53	1.08
Griswold	0	37		2	34		0	7		2	.04	78	1.59
Grand River	6	58		12	61		7	9		25	.51	128	2.62
State	25	83		25	101		7	24		57	1.16	208	4.25
Michigan	39	30		48	61		4	12		91	1.86	103	2.1
Lafayette	19	24		18	24		6	4		43	.88	52	1.06
Fort	12	44		23	48		6	25		41	.84	117	2.39
Congress	2	33		5	33		9	5		16	.33	71	1.45
Larned	1	53		12	17		2	3		15	.31	73	1.49
Jefferson	1	63		13	13		7	5		21	.43	81	1.65

FOURTEENTH LINE—EASTBOUND—Continued

Traffic count in congested district

Griswold	0	11		17	10		11	2		28	.57	23	.47
Woodbridge	1	13		3	7		12	0		16	.33	20	.41
Woodward	10	17		12	11		21	4		43	.88	32	.65
Bates	7	16		4	5		0	0		11	.22	21	.43
Jefferson	20	5		56	5		52	2		128	2.62	12	.24
Larned	7	2		25	3		18	0		50	1.02	5	.10
Congress	3	7		15	7		23	1		41	.84	15	.31
Cadillac Sq.	17	2		58	4		38	0		113	2.31	6	.12
Farmer	17	2		68	6		49	2		134	2.74	10	.20
Monroe	38	4		95	14		41	4		174	3.55	22	.45
Gratiot	19	4		147	17		104	4		270	5.52	25	.51
Library	9	3		34	3		30	2		73	1.49	8	.16
Broadway	75	4		114	14		91	6		280	5.72	24	.49
Grand River	2	2		74	9		47	0		123	2.51	11	.22
John R	2	5		26	2		23	0		51	1.04	7	.14
Witherell	10	7		29	4		9	4		48	.98	15	.31
Madison	0	6		3	3		6	2		9	.18	11	.22
Adams	14	5	14.56	26	6	15.69	6	0	19.00	46	.94	11	.22
Final		273			930			624				1,827	37.28

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Summary of traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	126	200	92	110	528
Number of cars observed	33	82	23	26	164
Per cent. of scheduled cars observed	26.2	41.0	25.0	23.6	31.1

GRAND BELT LINE—NORTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Passengers	
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Clark	19	0		55	0		205	0		39	0		318	9.64	0	0
Fort	32	2		55	2		76	0		26	0		189	5.73	4	.12
Celeron	2	0		1	0		2	0		0	0		5	.15	0	0
Lafayette	0	0		2	0		3	1		4	1		9	.27	2	.06
Amherst	3	0		5	1		1	0		0	1		9	.27	2	.06
Howard	2	0		0	0		0	2		4	1		6	.18	3	.09
Porter	7	0		7	1		0	8		6	9		20	.61	18	.55
Rogers	1	0		1	1		0	2		2	1		4	.12	4	.12
Christiancy	3	0		3	2		2	3		0	2		8	.24	7	.21
Eldred	0	0		0	2		0	1		0	1		0	0	4	.12
Dix	21	27		44	23		23	8		28	14		116	3.52	72	2.18
Newberry	1	0		2	1		0	4		0	2		3	.09	7	.21
McMillan	1	0		0	0		0	1		1	3		2	.06	4	.12
Romeyn	0	0		3	1		0	1		0	0		3	.09	2	.06
Toledo	3	4		11	6		1	9		3	8		18	.54	27	.82
Brandon	3	1		5	3		0	15		1	5		9	.27	24	.73
Plummer	1	2		5	8		0	8		1	6		7	.21	24	.73
Addison	3	1		1	4		4	9		5	8		13	.39	22	.67
McGregor	0	1		6	1		0	2		3	1		9	.27	5	.15
Leavitt	1	4		6	7		14	4		0	2		21	.69	17	.57
Rollin	0	3		4	2		0	9		0	1		4	.12	15	.45
Norton	0	0		2	4		0	18		1	1		3	.09	23	.70
Otis	1	1		0	4		1	25		0	2		2	.06	32	.97
Ingersoll	0	0		0	3		0	14		0	2		0	0	19	.58
Julia	0	0		0	1		0	7		0	2		0	0	10	.30
Michigan Av. Junc.	10	33		38	86		49	65		55	24		152	4.61	208	6.31

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GRAND BELT LINE—NORTHBOUND—Continued

34th St., Mich.	2	0		9	0		3	1		6	0		20	.61	1	.03
Jackson	2	3		0	1		0	20		1	7		3	.09	31	.94
Trolley Station	0	0		0	0		0	0		0	0		0	0	0	0
Buchanan	2	3		2	14		1	26		6	2		11	.33	45	1.36
Rich	1	1		0	2		0	25		1	4		2	.06	32	.97
Horatio	3	0		1	12		1	26		0	21		5	.15	59	1.79
Herbert	0	4		0	13		0	21		0	13		0	0	51	1.51
Deveraux	0	7		0	4		0	14		0	12		0	0	37	1.12
McGraw	0	9		0	18		0	16		0	14		0	0	57	1.73
Warren	0	18		0	41		0	21		0	23		0	0	103	3.12
Total			18.67			18.36			19.50			16.86	971		971	

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Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	25	53	25	31	134
Number of cars observed	6	14	6	7	33
Per cent. of scheduled cars observed	24.0	26.4	24.0	22.6	24.6

NOTE.—The "Grand Belt" line was put in operation October 23, 1914, and, therefore, no prorating of annual passengers is possible.

GRAND BELT LINE—SOUTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off	
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car
Warren	32	0		39	0		20	0		19	0		110	3.44	0	0
McGraw	7	0		4	0		10	0		5	0		26	.81	0	0
Deveraux-34th	8	0		4	0		3	0		1	0		16	.50	0	0
35th-Deveraux	10	0		1	0		0	0		2	0		13	.41	0	0
Herbert	15	0		10	1		6	2		1	0		32	1.00	3	.09
Horatio	17	4		10	1		3	1		0	2		30	.94	8	.25
Rich	11	0		5	0		1	1		3	1		20	.63	2	.06
Buchanan	21	0		3	3		1	5		5	5		30	.94	13	.41
Trolley Station	1	0		0	0		0	1		0	0		1	.03	1	.03
Jackson	19	0		0	2		0	0		1	0		20	.63	2	.06
Michigan-35th	11	54		4	31		5	12		0	4		20	.63	101	3.16
34th-Junc., Mich	46	0		42	5		35	3		23	4		146	4.56	12	.37
Julia	8	0		0	1		0	0		0	0		8	.25	1	.03
Ingersol	6	0		2	0		0	0		0	0		8	.25	0	0
Otis	4	1		2	0		0	1		0	0		6	.19	2	.06
Norton	3	0		4	1		0	3		0	1		7	.22	5	.16
Rollin	0	1		0	0		2	2		4	1		6	.19	4	.13
Leavitt	2	7		3	3		6	1		2	0		13	.41	11	.34
McGregor	1	1		2	7		1	2		1	1		5	.16	11	.34
Addison	5	1		2	3		1	0		0	0		8	.25	4	.13
Plumer	0	0		1	3		1	4		0	2		2	.06	9	.28
Brandon	4	0		2	2		0	2		0	0		6	.19	4	.13
Toledo	8	19		4	3		1	6		6	8		19	.59	36	1.13
Romeyn	1	0		2	2		1	0		0	0		4	.13	2	.06
McMillan	2	0		0	2		0	8		2	1		4	.13	11	.34

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GRAND BELT LINE—Continued—SOUTHBOUND

Newberry	1	0		0	0		0	1		0	0		1	.03	1	.03
Dix	11	16		17	21		8	10		17	14		53	1.66	61	1.91
Eldred	4	1		2	4		1	1		1	0		8	.25	6	.19
Christiancy	5	1		1	1		2	0		0	0		8	.25	2	.06
Rogers	3	2		1	1		1	0		0	1		5	.16	4	.13
Porter	4	1		1	7		0	3		9	8		14	.44	19	.59
Howard	1	2		0	1		0	2		2	5		3	.09	10	.32
Amherst	2	0		1	3		0	1		0	1		3	.09	5	.16
Lafayette	0	4		1	4		0	4		0	9		1	.03	21	.66
Celeron	0	0		0	2		0	14		0	0		0	0	16	.50
Fort	0	28		0	56		0	19		0	33		0	0	136	4.25
Fort and Clark	0	130		0	0		0	0		0	3		0	0	133	4.16
Total			20.83			16.75			17.50			16.13	656		656	

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Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	25	53	25	31	134
Number of cars observed	6	12	6	8	32
Per cent. of scheduled cars observed	24.0	22.6	24.0	25.8	23.9

NOTE.—The "Grand Belt" Line was put in operation October 28, 1914, and, therefore, no prorating of annual passengers is possible.

HAMILTON LINE—NORTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Atwater	16	0		162	0		72	0		88	0		338	2.54	0	0	249,500	0
Woodbridge	7	0		18	0		30	0		21	0		76	.57	0	0	56,000	0
Jefferson	15	0		50	1		65	0		108	0		238	1.79	1	.01	175,800	738
Larned	10	0		112	1		55	0		143	0		320	2.40	1	.01	236,200	738
Congress	20	0		168	3		71	1		146	1		404	3.03	5	.04	298,100	3,690
Fort	111	0		339	28		212	15		393	21		1,055	7.94	64	.48	778,000	47,250
Gratiot & State	64	1		596	48		281	16		417	14		1,358	10.02	79	.59	1,002,768	58,300
Grand River and Wood	9	3	7.25	312	51	8.35	149	17	9.23	201	15	7.91	671	5.05	86	.65	495,000	63,400
Griswold	3	0		146	4		26	2		94	4		269	2.02	10	.08	198,500	7,378
Wash. Blvd	7	1		75	21		14	1		45	0		141	1.06	23	.17	104,100	16,975
Park Place	6	1		40	2		10	0		35	2		91	.67	5	.04	67,200	3,690
Bagley	5	0		23	11		5	0		19	4		52	.39	15	.11	38,350	11,075
Cass & Middle	4	1		51	17		19	4		32	6		106	.80	28	.21	78,200	20,650
Adams	1	0		28	1		8	3		13	4		50	.38	8	.06	36,900	5,900
Elizabeth	5	3		17	6		6	3		11	3		39	.29	15	.11	28,800	11,075
Columbia	7	1		11	13		4	1		28	7		50	.38	22	.17	36,900	16,250
Cherry	0	1		7	10		4	0		1	5		12	.09	16	.12	8,850	11,810
High and 3d	19	1		34	13		5	8		30	7		88	.66	29	.22	64,950	21,400
Henry, Locust, 3d and 4th	13	3		26	19		16	9		41	9		96	.72	40	.30	70,800	29,500
4th and Pine	2	1		15	11		10	2		8	3		35	.26	17	.13	25,800	12,550
5th	10	0		2	8		1	5		9	6		22	.17	19	.14	16,250	14,000
Greenwood	21	0		37	17		8	7		50	8		116	.87	32	.24	85,600	23,600
Bagg	34	2		52	12		9	2		55	14		150	1.13	30	.22	110,700	22,100
Vine	7	0		13	7		6	1		3	4		29	.22	12	.09	21,400	8,850
Charlotte	3	1		5	16		1	7		5	18		14	.11	42	.32	10,340	31,000
Marcy	4	2		4	30		0	6		4	31		12	.09	69	.52	8,850	50,900
Noble	4	0		16	36		2	14		2	26		24	.18	76	.57	17,700	56,000
Pitcher	20	1		19	46		3	25		17	48		59	.44	120	.90	43,500	88,600
Brainard	13	3	6.60	40	46	6.44	26	27	7.00	22	58		101	.76	134	1.01	74,500	98,900

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HAMILTON LINE—NORTHBOUND—Continued

Tuscola	12	4		18	32		9	13		5	43		44	.33	92	.69	32,500	67,820
Selden	8	0		26	48		3	22		15	47		52	.39	117	.88	38,350	86,700
Frank	8	4		9	37		7	17		11	22		35	.26	80	.60	25,800	59,000
Alexandrine	9	1		17	42		2	19		9	53		37	.28	115	.87	27,300	84,800
Willis	7	2		15	46		1	17		13	50		36	.27	115	.87	26,580	84,800
Calumet	5	3		20	55		4	23		14	45		43	.32	126	.95	31,720	93,000
Canfield	11	1		14	51		7	20		8	46		40	.30	118	.89	29,500	87,000
Lysander	9	2		11	43		3	18		4	35		27	.20	98	.73	19,940	72,300
Forest	150	13		250	87		75	66		193	93		668	5.02	259	1.95	493,000	191,000
Hancock	8	0		5	37		3	23		0	26		16	.12	86	.65	11,810	63,400
Warren	111	60		165	174		34	80		95	143		405	3.04	457	3.44	299,000	337,459
Putnam	1	2		13	59		6	27		11	55		31	.23	143	1.07	22,880	105,500
Merrick	3	4		15	87		0	42		11	79		29	.22	212	1.59	21,400	156,500
Reed	1	3		6	48		1	19		2	22		10	.08	92	.69	7,378	67,820
Kirby	2	5	6.09	14	45	6.53	2	23	6.92	6	62	6.69	24	.18	135	1.01	17,400	99,600
Ferry	4	2		6	48		1	25		1	54		12	.09	129	.97	8,850	95,200
Hudson	2	2		12	46		3	24		3	31		20	.15	103	.78	14,760	76,000
Stanley	5	7		10	99		0	30		3	110		18	.14	246	1.85	13,280	181,500
Trolley Station	1	1		0	5		1	4		0	4		2	.02	14	.11	1,476	10,340
Holden	22	140		28	136		45	57		29	70		124	.93	403	3.04	91,750	297,500
Dewey, Hamilton and Greenwood	0	23		6	27		0	2		1	57		7	.05	109	.82	5,160	80,400
Trolley Station	0	53		1	17		0	5		2	17		3	.02	92	.69	2,215	67,820
Baltimore	7	28		10	62		5	19		12	42		34	.25	151	1.14	25,100	111,500
Milwaukee	6	11		4	45		2	30		1	44		13	.10	130	.98	9,590	95,900
N. Grand Blvd	5	19	5.90	17	76	4.95	7	37	5.00	7	67	5.04	36	.27	199	1.50	26,580	146,900
Lothrop	2	10		2	43		0	15		0	35		4	.03	103	.78	2,950	76,000
Bethune	0	6		1	19		4	6		0	22		5	.04	53	.40	3,690	39,100
Pallister	3	0		4	41		2	16		2	44		11	.08	101	.76	8,120	74,500
Delaware	5	3		7	64		6	28		1	50		19	.14	145	1.09	14,100	107,100
Seward	0	8		5	43		0	24		1	21		6	.05	96	.72	4,425	70,800
Virginia	0	17		5	43		1	14		0	35		6	.05	109	.82	4,425	80,400
Euclid	6	12		7	59		4	36		3	50		20	.15	157	1.18	14,760	115,900
Philadelphia	4	5		4	34		1	29		6	38		15	.11	106	.79	11,075	78,200
Pingree	5	19	3.57	4	55	3.60	5	24	3.92	8	45	3.64	22	.17	143	1.07	16,250	105,541
Blaine	4	4		1	36		2	18		0	33		7	.05	91	.68	5,160	67,100
Gladstone	0	5		3	35		0	10		0	35		3	.02	85	.64	2,210	62,700
Hazlewood	0	3		2	31		0	9		0	19		2	.02	62	.47	1,475	45,700
Taylor	0	6		0	22		0	11		3	8		3	.02	47	.35	2,210	34,650
Clairmount	0	21		5	69		1	23		2	46		8	.06	159	1.20	5,900	117,300
Atkinson	1	10		1	22		0	15		1	11		3	.02	58	.44	2,210	42,800

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HAMILTON LINE—NORTHBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Edison	0	10		1	22		1	9		0	16		2	.02	57	.43	1,475	42,050
Longfellow	0	10		1	23		0	6		0	15		1	.01	54	.40	738	39,800
Chicago Blvd	0	6		0	16		1	5		0	10		1	.01	37	.28	738	27,300
Boston Blvd	0	10		0	9		0	0		0	3		0	0	22	.17	0	16,250
Glynn Court	2	6		3	16		0	14		0	10		5	.04	46	.35	3,690	33,900
Calvert	4	8		1	15		0	11		0	26		5	.04	60	.45	3,690	44,250
Collingwood	4	6		0	37		1	17		0	26		5	.04	86	.65	3,690	63,400
Lawrence	0	7		2	37		0	31		0	32		2	.02	107	.80	1,475	79,000
Burlingame	0	7		4	35		0	15		0	12		4	.03	69	.52	2,950	50,900
Webb-Hamilton	5	45	5.13	19	105	5.21	9	89	5.46	3	64	4.79	36	.27	303	2.28	26,503	223,600
Lincoln	1	0		0	6		0	0		0	3		1	.01	9	.07	738	6,640
Herman	0	1		0	2		0	0		0	0		0	0	3	.02	0	2,210
Oakman-Webb	0	4		1	3		0	1		1	8		2	.02	16	.12	1,475	11,810
Tuxedo	0	0		2	5		0	2		0	4		2	.02	11	.08	1,475	8,120
Elmhurst	0	4		3	12		0	2		1	9		4	.03	27	.20	2,950	19,920
Cortland	2	0		2	4		0	1		0	0		4	.03	5	.04	2,950	3,690
Monterey	0	0		0	6		0	0		1	0		1	.01	6	.05	738	4,425
Richton	0	0		0	5		0	2		0	1		0	0	8	.06	0	5,900
Highland	0	0		1	8		1	0		1	9		3	.02	17	.13	2,210	12.550
Sturtevant and Gray	1	1		2	2		1	1		2	5		6	.05	9	.07	4,425	6,640
Leslie	1	0		0	0		0	0		0	1		1	.01	1	.01	738	738
Glendale	1	5		4	24		0	7		8	31		13	.10	67	.50	9,590	49,400
Fairview	1	0		0	0		0	1		0	0		1	.01	1	.01	738	738
Beuna Vista	0	0		2	9		0	3		0	1		2	.02	13	.10	1,475	9,590
Tyler	0	0		1	4		0	1		2	0		3	.02	5	.04	2,210	3,690
Waverly	0	0		0	4		0	2		3	2		3	.02	8	.06	2,210	5,900
Davison	0	0		1	6		0	0		0	4		1	.01	10	.08	738	7,380
Clements	2	0		4	9		1	0		3	4		10	.08	13	.10	7,380	9,950
Grand	1	0		6	5		0	0		1	4		8	.06	9	.07	5,900	6,640
Pasadena	0	2		9	9		0	3		0	7		9	.07	21	.16	6,640	15,500

HAMILTON LINE—NORTHBOUND—Continued

Ford	0	0		3	5		0	0		0	5		3	.02	10	.08	2,210	7,380
LaBelle	1	1		1	4		0	0		2	2		4	.03	7	.05	2,950	5,160
Kendall	0	5		0	7		0	0		0	0		0	0	12	.09	0	8,850
Metzger-Oakman	9	4		12	16		3	3		6	12		30	.22	35	.26	22,100	25,800
Herman	1	1		0	0		0	0		0	3		1	.01	4	.03	738	2,950
Trumbull	0	0		0	0		0	3		1	0		1	.01	3	.02	738	2,210
Lincoln	0	4		6	8		0	0		2	9		8	.06	21	.16	5,900	15,500
Hamilton Blvd	0	27		48	33		3	11		0	14		51	.38	85	.64	37,600	62,700
Woodward	1	185	9.20	0	243	10.82	0	30	11.20	0	82	10.05	1	.01	540	4.06	738	398,200
Total			43.74			45.90			48.73			44.97	8,151		8,151		6,014,140	6,014,140

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	67	0		179	0		101	0		347	5.25	0	0
Jefferson	15	2		46	9		75	1		136	2.06	12	.18
Larned	13	3		56	3		48	1		117	1.77	7	.11
Congress	34	8		98	7		64	3		196	2.97	18	.27
Fort	111	25		242	17		152	9		505	7.65	51	.77
State	120	12		364	40		132	5		616	9.33	57	.86
Grand River	43	12		236	44		90	6		369	5.60	62	.94
Griswold	14	2		57	10		30	3		101	1.53	15	.23
Washington	13	2	5.74	33	13	6.13	35	0	7.33	81	1.23	15	.23
Final		364			1,168			699				2,231	33.80

Summary of both traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
No. of cars scheduled	83	98	64	86	331
No. of cars observed	32	90	32	45	199
Per cent. of scheduled cars observed	38.5	91.8	50.0	52.3	60.1

HAMILTON LINE—SOUTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			Total				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Woodward	13	0		116	0		52	0		35	0		216	1.67	0	0	178,400	0
Hamilton Blvd.	11	0		88	6		18	13		118	2		235	1.82	21	.16	194,181	17,360
Lincoln	2	0		16	4		1	0		4	6		23	.18	10	.08	19,000	8,260
Trumbull	1	0		1	0		0	0		3	1		5	.04	1	.01	4,130	826
Herman	3	0		0	0		0	0		0	0		3	.02	0	0	2,480	0
Oakman	7	4		17	10		6	2		5	1		35	.27	17	.13	28,900	14,060
Kendall	2	1		4	0		0	0		0	1		6	.05	2	.02	4,960	1,654
LaBelle	1	0		2	2		0	0		1	2		4	.03	4	.03	3,310	3,310
Ford	1	0		3	2		0	0		2	2		6	.05	4	.03	4,960	3,310
Pasadena	4	1		3	4		2	2		0	1		9	.07	8	.06	7,440	6,615
Grand	5	2		7	5		1	0		1	0		14	.11	7	.05	11,570	5,785
Clements	0	2		3	2		1	2		3	2		7	.05	8	.06	5,785	6,615
Davison	2	2		7	2		6	0		3	0		18	.14	4	.03	14,890	3,310
Waverly	1	0		5	1		1	1		0	3		7	.05	5	.04	5,785	4,130
Tyler	1	0		0	0		2	2		2	0		5	.04	2	.02	4,130	1,654
Buena Vista	3	0		2	2		4	1		0	2		9	.07	5	.04	7,440	4,130
Fairview	1	0		0	0		1	0		0	0		2	.02	0	0	1,654	0
Glendale	5	1		36	5		6	0		18	7		65	.50	13	.10	53,700	10,750
Leslie	1	0		2	0		0	0		0	1		3	.02	1	.01	2,480	826
Gray	5	0		6	4		0	2		2	1		13	.10	7	.05	10,750	5,785
Highland	1	0		2	2		0	3		4	2		7	.05	7	.05	5,785	5,785
Richton	1	0		1	0		1	1		0	1		3	.02	2	.02	2,480	1,654
Monterey	0	0		0	0		1	2		0	0		1	.01	2	.02	826	1,654
Cortland	0	0		7	5		0	0		10	5		17	.13	10	.08	14,060	8,260
Elmhurst	0	0		7	0		0	0		5	2		12	.09	2	.02	9,925	1,654
Tuxedo	0	1		7	0		0	4		4	0		11	.09	5	.04	9,100	4,130
Webb	0	0		7	1		0	0		0	0		7	.05	1	.01	5,785	826
Herman	0	0		0	0		2	0		0	2		2	.02	2	.02	1,654	1,654
Trumbull	0	0		0	0		0	0		1	0		1	.01	0	0	826	0
Lincoln	1	0		0	0		0	0		0	0		1	.01	0	0	826	0

HAMILTON LINE—SOUTHBOUND—Continued

Hamilton	33	1	10.05	79	6	10.10	73	2	10.00	47	5	11.14	232	1.80	14	.11	191,600	11,570
Burlingame	11	0		23	2		17	0		12	3		63	.49	5	.04	52,100	4,130
Lawrence	8	0		34	4		6	1		18	2		66	.51	7	.05	54,600	5,785
Collingwood	12	0		25	4		9	0		12	4		58	.45	8	.06	47,950	6,615
Calvert	12	0		14	1		12	1		8	3		46	.36	5	.04	38,000	4,130
Glynn Court	7	0		9	0		13	0		3	0		32	.25	0	0	26,450	0
Boston Blvd	3	1		3	0		7	0		7	1		20	.15	2	.02	16,530	1,654
Chicago Blvd.	1	0		14	1		11	0		6	0		32	.25	1	.01	26,450	826
Longfellow	3	0		9	3		15	0		6	0		33	.26	3	.02	27,280	2,480
Edison	6	2		14	0		20	1		8	0		48	.37	3	.02	39,650	2,480
Atkinson	18	0		34	0		19	2		9	0		80	.62	2	.02	66,150	1,654
Clairmount	18	4		39	13		16	2		23	5		96	.74	24	.19	79,400	19,782
Taylor	7	1		15	0		17	0		6	3		45	.35	4	.03	37,200	3,310
Hazelwood	9	0		18	3		10	1		9	10		46	.36	14	.11	38,000	11,570
Gladstone	6	0		23	1		11	1		10	1		50	.39	3	.02	41,350	2,480
Blaine	14	1		39	6		21	1		18	2		92	.71	10	.08	76,000	8,260
Pingree Tr. Sta.	11	3	6.0	58	5	5.15	15	2	4.92	25	4	4.50	109	.85	14	.11	90,100	11,570
Montrose	14	0		50	2		22	1		31	4		117	.91	7	.05	96,750	5,785
Euclid	9	4		61	10		37	2		26	3		133	1.03	19	.15	109,900	15,700
Virginia	8	2		36	3		36	3		29	6		109	.85	14	.11	90,050	11,570
Seward	12	0		38	7		16	2		16	4		82	.64	13	.10	67,800	10,750
Delaware	16	2		50	9		7	3		36	1		109	.85	15	.12	90,050	12,400
Pallister	14	1		41	4		17	1		26	8		98	.76	14	.11	81,000	11,570
Bethune	3	0		24	2		17	2		18	1		62	.48	5	.04	51,200	4,130
Lothrop	7	1		23	3		7	5		22	1		59	.46	10	.08	48,750	8,260
No. Gr. Blvd	15	0	3.55	79	19	4.15	42	14	3.62	43	12	3.46	179	1.39	45	.35	148,000	37,200
Milwaukee	8	0		41	6		32	11		38	14		119	.92	31	.24	98,400	25,620
Baltimore	11	1		52	17		31	2		23	5		117	.91	25	.19	96,800	20,670
Trolley Station	4	0		13	4		42	3		23	5		82	.64	12	.09	67,800	9,912
Holden	7	14		104	18		72	21		38	13		221	1.71	66	.51	182,600	54,550
Forsyth	3	0		20	17		13	1		21	2		57	.44	20	.15	47,100	16,530
Fourth	2	0		31	2		46	0		8	0		87	.67	2	.02	71,900	1,654
Third	13	6		44	8		97	1		24	4		178	1.38	19	.15	147,100	15,700
Colburn	11	1		55	5		15	3		15	0		96	.74	9	.07	79,400	7,440
Palmer	10	0		59	8		23	0		30	10		122	.95	18	.14	100,900	14,890

HAMILTON LINE—SOUTHBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Hudson	14	6		38	4		6	1		31	6		89	.89	17	.13	73,600	14,060
Ferry	19	0		51	4		10	1		28	9		108	.84	14	.11	89,250	11,570
Kirby	14	3	4.57	53	13	5.50	18	3	6.91	39	13	5.54	124	.96	32	.25	102,500	26,460
Merrick	46	0		69	14		10	7		49	6		174	1.35	27	.21	144,000	22,300
Putnam	14	2		49	14		2	2		22	13		87	.67	31	.24	71,900	25,620
Warren	46	44		88	194		20	232		84	127		238	1.85	597	4.63	196,800	493,200
Hancock	9	0		37	7		19	13		18	6		83	.65	26	.20	68,600	21,500
Forest	44	23		134	109		94	117		119	106		391	3.03	355	2.75	322,900	293,300
Prentis	11	0		32	12		10	0		30	8		83	.65	20	.15	68,600	16,530
Canfield	14	1		45	20		14	14		39	4		112	.87	39	.30	92,600	32,200
Calumet	17	3		44	5		8	16		33	17		102	.79	41	.32	84,300	33,900
Willis	22	0		44	11		7	10		37	26		110	.85	47	.36	90,950	38,850
Alexandrine	28	4		62	26		12	23		35	21		137	1.06	74	.57	113,340	61,180
Selden	32	6		73	22		17	16		39	28		161	1.25	72	.56	133,100	59,500
Tuscola	13	1		42	15		4	8		23	5		82	.64	20	.22	67,800	23,980
Brainard	19	3	5.0	59	30	5.78	27	12	6.0	23	14	5.42	130	1.01	59	.46	107,500	48,800
Pitcher	27	0		69	21		9	14		43	21		148	1.15	56	.43	122,400	46,300
Peterboro	20	2		64	8		8	4		24	15		116	.90	29	.22	95,900	23,980
Charlotte	23	1		76	21		10	22		48	19		157	1.22	63	.49	129,725	52,050
Bagg	13	11		29	38		9	34		15	31		66	.51	114	.88	54,600	94,200
Ledyard	7	11		34	29		3	30		27	21		71	.55	91	.70	58,700	75,200
Second West	0	0		0	0		0	0		0	1		0	0	1	.01	0	826
South Second	0	0		1	0		1	1		0	0		2	.02	1	.01	826	826
East Second	2	1		12	10		0	4		6	0		20	.15	15	.12	16,530	12,400
Cass & Ledyard	4	4		21	18		2	14		41	21		68	.53	57	.44	56,200	47,100
Sibley	2	3		5	3		4	1		1	2		12	.09	9	.07	9,925	7,440
Henry	12	3		20	25		5	9		23	11		60	.47	48	.37	49,600	39,700
Duffield	3	0		0	0		0	3		1	0		4	.03	3	.02	3,310	2,480
High	11	7		13	12		1	4		8	19		33	.26	42	.33	27,300	34,700
Montcalm	1	1		9	3		0	4		0	1		10	.08	9	.07	8,260	7,440
Columbia	1	1		4	15		0	11		2	6		7	.05	33	.26	5,785	27,300
Elizabeth	1	10		5	22		1	9		3	11		10	.08	52	.41	8,260	43,000
Adams	0	11		3	21		0	6		1	19		4	.03	57	.44	3,310	47,100
Grand River	1	31	5.8	16	69	6.53	2	41	5.10	6	61	6.50	25	.19	202	1.56	20,680	167,100
Bagley	0	14		8	48		0	11		4	9		12	.09	82	.63	9,925	67,750

HAMILTON LINE—SOUTHBOUND—Continued

Park	1	21		4	23		3	36		5	26		13	.10	106	.82	10,750	87,600
Washingt'n Blvd.	0	48		6	167		2	28		5	49		13	.10	292	2.26	10,750	241,300
Griswold	5	75		10	158		3	36		4	89		22	.17	358	2.77	18,200	296,074
Woodward	1	66		7	355		3	37		12	101		23	.18	559	4.33	19,000	462,000
State	5	63		31	384		16	107		12	142		64	.50	696	5.40	52,850	575,100
Michigan	7	120		33	326		8	125		26	284		74	.57	855	6.63	61,200	706,800
Fort	10	96		29	183		15	54		31	104		85	.66	437	3.38	70,225	361,000
Congress	0	57		6	77		2	25		0	52		8	.06	211	1.63	6,615	174,500
Larned	5	26		0	59		0	11		4	48		9	.07	144	1.12	7,440	119,000
Jefferson	0	41		0	80		3	15		4	70		7	.05	206	1.60	5,785	170,200
Woodbridge	0	16		1	28		0	6		0	12		1	.01	62	.48	826	51,200
Atwater	0	47	8.86	0	103	7.96	0	56	9.0	0	88	7.84	0	0	294	2.28	0	243,000
Totals			43.83			45.17			45.55			44.40	7,277		7,277		6,014,140	6,014,140

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	1,161	0		1,686	0		377	0		3,224	45.41	0	0
Washington	0	52		12	103		1	11		13	.18	166	2.34
Griswold	0	137		10	126		2	25		12	.17	288	4.05
Woodward	4	145		12	351		4	44		20	.28	540	7.60
State	12	154		34	285		14	67		60	.84	506	7.12
Michigan	18	212		31	381		3	106		52	.73	699	9.84
Fort	24	159		11	137		12	54		47	.66	350	4.93
Congress	1	78		5	76		3	19		9	.12	173	2.43
Larned	2	40		0	59		2	11		4	.05	110	1.55
Jefferson	2	78	6.1	1	73	6.3	0	12	6.3	3	.04	163	2.29
Final		169			211			69				449	6.34

Summary of both traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
No. of cars scheduled	83	98	64	86	331
No. of cars observed	31	87	35	47	200
Per cent. of scheduled cars observed	37.3	88.7	54.6	54.7	60.4

HARPER LINE—NORTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Bates – Woodbridge	11	0		68	0		33	0		48	0		160	3.66	0	0	307,170	0
Jefferson	1	0		13	2		1	0		8	0		23	.52	2	.05	44,160	3,840
Larned	1	0		5	1		3	0		5	0		14	.32	1	.02	26,890	1,920
Congress	3	0		15	0		1	0		16	0		35	.79	0	0	67,200	0
Cadillac Square	9	0		30	1		14	0		20	0		73	1.66	1	.02	140,100	1,920
Farmer-Bates	5	0		27	2		11	1		20	0		63	1.43	3	.07	121,000	5,760
Monroe	5	0		52	4		16	4		54	1		127	2.89	9	.22	244,000	17,280
Gratiot-Farmer	12	0		121	7		28	0		53	1		214	4.87	8	.18	410,900	15,360
Library	0	0		9	0		4	0		0	0		13	.29	0	0	24,960	0
Broadway Gratiot	10	0		80	1		13	1		79	2		182	4.13	4	.09	349,500	7,680
Randolph & Macomb-Gratiot	8	0		51	0		7	0		37	0		103	2.35	0	0	197,700	0
Brush	0	0		7	0		4	0		9	0		20	.46	0	0	38,400	0
Beaubien	1	1		3	1		3	0		5	0		12	.27	2	.05	23,040	3,840
Antoine	2	1		8	4		5	0		3	0		18	.41	5	.11	34,560	9,610
Hastings	0	1		6	6		2	2		2	6		10	.23	15	.34	19,200	28,800
Rivard	2	1	7.50	0	4	8.48	0	0	9.67	2	1	8.96	4	.09	6	.14	7,680	11,520
Russell-Macomb	5	1		4	7		3	2		1	7		13	.29	17	.39	24,960	32,650
Clinton	0	1		1	7		0	1		1	1		2	.05	10	.23	3,840	19,200
Mullett	1	0		0	2		1	1		0	2		2	.05	5	.11	3,840	9,610
Cather.-Russell	1	1		9	4		2	0		7	5		19	.43	10	.23	36,480	19,200
Riopelle	3	0		7	8		0	2		1	4		11	.25	14	.32	21,130	26,880
Orleans	0	0		4	4		0	2		3	8		7	.16	14	.32	13,440	26,880
Dequindre	0	2		3	4		2	0		0	6		5	.11	12	.27	9,610	23,040
Trolley Station	5	0		0	1		0	0		0	1		5	.11	2	.05	9,610	3,840
St. Aubin	8	1	4.66	5	17	4.12	3	5	4.67	15	7	5.07	31	.71	30	.68	59,520	57,600
Dubois	1	0		4	14		2	5		2	4		9	.22	23	.52	17,280	44,170
Chene	3	0		13	11		3	2		5	15		24	.55	28	.64	46,090	53,770
Trolley Station	2	0		0	2		1	2		0	2		3	.07	6	.14	5,760	11,520
Jos. Camp. Cath.	13	3		16	9		0	4		5	16		34	.77	32	.73	65,300	61,450
Sherman	4	0		7	4		1	3		3	5		15	.34	12	.27	28,790	23,040

HARPER LINE—NORTHBOUND—Continued

Maple	0	0		2	6		0	1		2	3		4	.09	10	.23	7,680	19,200
Chestnut	2	0		1	4		0	5		0	0		3	.07	9	.22	5,760	17,280
Antietam	1	0		5	3		2	1		0	7		8	.18	11	.25	15,360	21,130
Jay	1	0		2	2		0	0		2	2		5	.11	4	.09	9,610	7,680
Waterloo-Jos. Campau	5	2		10	14		3	2		4	6		22	.50	24	.55	42,250	46,090
McDougall	0	0		2	8		0	2		10	7		12	.27	17	.39	23,040	32,650
Elmwood (So.)	4	1	5.50	5	10	4.93	0	2	6.00	2	3	5.61	11	.25	16	.36	21,130	30,740
Emwood (No.)	2	1		1	5		1	0		2	9		6	.14	15	.34	11,520	28,800
Trolley Station	0	0		0	0		0	2		1	3		1	.02	5	.11	1,920	9,610
Ellery	0	0		1	1		0	2		0	0		1	.02	3	.07	1,920	5,760
Burlage	0	0		0	1		0	1		0	8		0	0	10	.23	0	19,200
Mt. Elliott-Waterloo	20	4		23	35		14	7		22	34		79	1.79	80	1.82	151,600	153,500
Hendricks	7	1		6	3		2	1		1	2		16	.36	7	.16	30,740	13,440
Hunt	3	0		1	1		1	2		0	6		5	.11	9	.20	9,610	17,280
Charlevoix	2	0		3	8		0	2		4	5		9	.20	15	.34	17,280	28,800
Arndt	1	0		1	6		1	1		1	2		4	.09	9	.20	7,680	17,280
Berlin	2	0		3	4		0	2		0	1		5	.11	7	.16	9,610	13,440
Heidelberg	0	2		1	5		0	4		0	4		1	.02	15	.34	1,920	28,800
Schneider	0	0		1	1		0	0		1	0		2	.05	1	.02	3,840	1,920
Preston	0	0		1	0		0	0		0	0		1	.02	0	0	1,920	0
Mack & Ludden	17	10	5.33	58	31	5.05	8	6	6.00	33	43	5.14	116	2.64	90	2.02	222,600	172,700
Pulford	1	1		1	6		0	2		0	6		2	.05	15	.34	3,840	28,800
Zender	0	0		0	0		0	2		1	0		1	.02	2	.05	1,920	3,840
Sylvester	0	1		0	5		0	0		3	0		3	.07	6	.14	5,760	11,510
Gratiot	7	5		70	34		7	3		67	23		151	3.44	65	1.48	289,900	124,700
Gratiot (No. Si.) and Willis	10	5		8	3		9	6		11	3		38	.86	17	.39	72,970	32,650
Canfield	1	1		2	3		0	0		0	0		3	.07	6	.14	5,760	11,520
Garfield	0	0		1	2		0	0		0	1		1	.02	3	.07	1,920	5,760
Forest	29	1		131	43		32	3		64	15		256	5.82	62	1.41	491,500	119,000
Trolley Station	0	0		0	2		0	0		0	0		0	0	2	.05	0	3,840
Warren	1	0		1	19		3	5		1	1		6	.14	25	.57	11,510	48,000
Theodore	0	5		3	13		2	4		0	10		5	.11	32	.73	9,610	61,450
Farnsworth	0	1		1	19		1	2		0	10		2	.05	32	.73	3,840	61,450
Frederick	2	1		0	6		0	5		0	3		2	.05	15	.34	3,840	28,800
Kirby	0	4	5.00	1	4	5.45	0	7	6.00	0	11	5.14	1	.02	26	.59	1,920	49,900

HARPER LINE—NORTHBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Ferry	0	1		1	9		0	4		0	14		1	.02	28	.64	1,920	53,780
Palmer & Weitzel	0	18		0	42		0	5		4	23		4	.09	88	2.00	7,680	169,000
No. Grand Blvd., East	0	83		0	49		2	7		0	22		2	.05	161	3.66	3,840	309,200
Medbury	1	9		0	22		1	5		0	34		2	.05	70	1.59	3,840	134,400
Holburn	0	5		0	20		0	9		0	17		0	0	51	1.16	0	97,940
Lambert	0	1		0	10		2	2		0	4		2	.05	17	.39	3,840	32,650
Harper-Mt. Elliott	0	44	3.16	8	105	3.32	9	13	3.67	2	49	3.07	19	.43	211	4.80	36,470	404,900
Sherwood & Foster	0	1		2	19		0	10		0	14		2	.05	44	1.00	3,840	84,490
Concord	0	2		0	13		0	5		0	11		0	0	31	.70	0	59,520
Canton	0	0		0	27		0	3		0	17		0	0	47	1.07	0	90,220
Helen	0	1		0	24		0	6		0	15		0	0	46	1.04	0	88,320
Carrie	0	0		0	4		0	1		0	12		0	0	17	.39	0	32,650
Frontenac	0	0		2	23		0	12		0	15		2	.05	50	1.14	3,840	96,100
Field	0	1		1	17		0	5		0	13		1	.02	36	.82	1,920	69,140
Baldwin	0	1		0	9		0	3		0	10		0	0	23	.52	0	44,170
Van Dyke	0	9	5.00	0	101	6.07	0	54	6.67	0	48	5.11	0	0	212	4.82	0	407,200
Totals			36.15			37.42			42.68			38.10	2,068		2,068		3,970,580	3,970,580

Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	42	79	40	58	219
Number of cars observed	6	21	3	14	44
Per cent. of scheduled cars observed	14.3	26.6	7.5	24.1	20.1

NOTE.—As the Harper Line is at present a loop line no special observations were made through the congested district.

HARPER LINE—SOUTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Van Dyke	55	0		56	0		16	0		47	0		174	3.96	0	0	278,500	0
Baldwin	4	0		13	0		8	0		0	0		25	.57	0	0	39,990	0
Field	5	0		15	2		4	0		12	0		36	.82	2	.05	57,580	3,200
Frontenac	6	0		6	0		8	0		11	0		31	.71	0	0	49,580	0
Carrie	8	0		12	0		2	0		5	0		27	.61	0	0	43,190	0
Helen	10	0		9	1		8	0		8	0		35	.80	1	.02	55,980	1,600
Canton	18	0		9	0		5	0		6	0		38	.86	0	0	60,800	0
Concord	4	0		19	0		8	0		10	1		41	.93	1	.02	65,580	1,600
Sherwood & Concord	7	1		9	0		57	0		14	0		87	1.98	1	.02	139,500	1,600
Mt. Elliot-Harp.	45	5	6.20	85	3	5.44	209	3	7.00	34	1	5.41	373	8.50	12	.27	596,800	19,180
Lambert	2	0		15	0		7	0		6	0		30	.68	0	0	48,010	0
Holburn	11	0		23	0		5	0		19	1		58	1.32	1	.02	92,810	1,600
Medbury	9	1		15	0		15	0		7	0		46	1.05	1	.02	73,600	1,600
No. Grand Blvd., East	10	0		54	0		56	2		16	1		136	3.10	3	.07	217,900	4,800
Palmer & Weitzel	6	1		27	1		20	0		16	0		69	1.57	2	.05	110,600	3,200
Ferry	9	0		11	0		3	0		15	0		38	.86	0	0	60,800	0
Kirby	9	0	3.00	11	0	3.22	5	1	4.57	13	0	3.50	38	.86	1	.02	60,800	1,600
Frederick	9	1		4	0		1	0		4	4		18	.41	5	.11	28,800	8,000
Farnsworth	10	0		7	1		2	2		3	0		22	.50	3	.07	35,200	4,800
Theodore	3	1		5	1		4	17		8	0		20	.45	19	.43	32,000	30,400
Warren	3	1		11	3		3	7		6	0		23	.52	11	.25	36,800	17,600
Trolley Station	3	0		3	0		0	1		0	0		6	.14	1	.02	9,600	1,600
Forest	10	46		20	85		26	123		23	95		79	1.79	349	7.94	126,600	558,900
Garfield	3	0		3	2		1	0		7	1		14	.32	3	.07	22,500	4,800
Canfield	0	2		1	2		2	13		0	0		3	.07	17	.39	4,800	27,200
Gratiot & Willis	16	38		21	107		16	59		26	59		79	1.79	263	5.99	126,400	421,100
Sylvester	7	4		4	1		1	3		0	0		12	.27	8	.18	19,200	12,800
Zender	0	0		6	3		0	0		1	1		7	.16	4	.09	11,200	6,400
Pulford	0	0		2	5		0	2		0	0		2	.05	7	.16	3,200	11,200
Mack & Ludden	16	12	6.20	42	24	5.55	18	29	5.28	24	38	5.41	100	2.28	103	2.34	160,100	165,100

HARPER LINE—SOUTHBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Preston	5	0		3	1		2	4		2	0		12	.27	5	.11	19,200	8,000
Schneider	1	0		2	0		0	1		4	0		7	.16	1	.02	11,200	1,600
Heidelberg	9	1		5	0		1	1		5	0		20	.45	2	.05	32,000	3,200
Berlin	10	3		8	4		0	6		4	0		22	.50	13	.29	35,180	20,800
Arndt	4	2		4	3		0	2		2	0		10	.23	7	.16	16,000	11,200
Charlevoix	3	1		5	1		2	3		2	0		12	.27	5	.11	19,200	8,000
Hunt	0	0		1	2		0	2		1	0		2	.05	4	.09	3,200	6,400
Hendricks and Mt. Elliott	18	3		23	15		15	59		16	15		72	1.64	92	2.09	115,160	147,160
Burlage	0	0		8	1		0	1		4	0		12	.27	2	.05	19,180	3,200
Ellery	9	0		6	4		0	2		1	0		16	.36	6	.14	25,600	9,600
Trolley Station	1	1		5	0		0	3		0	0		6	.14	4	.09	9,600	6,400
Elmwood	11	1	4.33	14	5	3.94	1	6	4.25	10	5	4.00	36	.82	17	.39	57,600	27,180
McDougall	3	0		8	4		0	1		3	8		14	.32	13	.29	22,400	20,800
Jos. Campau-Hend	2	0		4	6		0	9		6	2		12	.27	17	.39	19,200	27,190
Cleveland	1	0		6	2		0	3		4	0		11	.25	5	.11	17,600	8,000
Waterloo	8	2		7	7		1	6		2	7		18	.41	22	.50	28,780	35,190
Jay	2	1		7	2		1	5		4	0		14	.32	8	.18	22,400	12,800
Antietam	3	0		4	0		0	2		0	1		7	.16	3	.07	11,200	4,800
Chestnut	2	0		8	2		1	2		0	2		11	.25	6	.14	17,600	9,600
Maple	3	1		8	6		0	2		3	3		14	.32	12	.27	22,400	19,190
Sher. Jos. Campau	6	4		25	11		5	17		17	6		53	1.21	38	.86	84,780	60,790
Trolley Station	0	0		0	0		0	0		0	1		0	0	1	.02	0	1,600
Chene	11	6		16	8		2	10		7	7		36	.82	31	.71	57,580	49,600
Dubois	9	3		11	1		1	3		16	1		37	.84	8	.18	59,200	12,800
St. Aubin	18	1	5.50	21	5	5.22	5	8	5.00	4	5	5.00	48	1.09	19	.43	76,780	30,380
Dequindre	13	1		4	4		3	4		4	2		24	.55	11	.25	38,400	17,600
Orleans	2	0		11	1		2	5		3	1		18	.41	7	.16	28,780	11,200
Riopelle	3	2		11	5		2	2		1	3		17	.39	12	.27	27,180	19,190
Trolley Station	0	0		0	2		0	0		0	0		0	0	2	.05	0	3,200
Russell	1	5		5	5		1	2		2	2		9	.20	14	.32	14,400	22,400
Rivard	3	0		7	0		0	0		5	1		15	.34	1	.02	24,000	1,600
Hastings-Sher	4	11	4.50	1	18	3.66	3	12	3.50	1	13	3.83	9	.20	54	1.23	14,400	86,400
Catherine	0	0		0	0		1	1		0	0		1	.02	1	.02	1,600	1,600
Mullett	0	0		2	2		0	0		0	2		2	.05	4	.09	3,200	6,400

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HARPER LINE—SOUTHBOUND—Continued

Clinton Hast	5	12		9	2		0	1		0	4		14	.32	19	.43	22,400	30,390
Antoine	3	14		6	5		0	2		1	2		10	.23	23	.52	16,000	36,780
Raynor	0	3		1	3		1	0		1	0		3	.07	6	.14	4,800	9,600
Beaubien	0	2		1	2		0	0		0	1		1	.02	5	.11	1,600	8,000
Brush-Clinton	10	17		1	11		0	2		0	4		1	.02	34	.77	1,600	54,380
Macomb-Brush	0	15		0	3		0	5		0	9		0	0	32	.73	0	51,200
Randolph	1	20		4	67		0	20		2	25		7	.16	132	3.00	11,200	211,200
Gratiot-Macomb and Broadway	0	5		1	10		0	10		0	7		1	.02	32	.73	1,600	51,200
Library	1	13		1	25		0	4		1	5		3	.07	47	1.07	4,800	75,200
Farmer	0	20		3	52		0	16		0	15		3	.07	103	2.35	4,800	164,800
Woodward and State-Gratiot	1	72	5.16	4	101	5.72	2	18	6.50	1	49	5.27	8	.18	240	5.47	12,800	384,000
Trolley Station	0	0		0	1		0	0		0	0		0	0	1	.02	0	1,600
Griswold	4	32		9	42		16	12		4	15		33	.75	101	2.30	52,800	161,700
Shelby-State	2	9		2	15		0	1		1	4		5	.11	29	.66	8,000	46,400
Michigan	11	8		8	12		8	15		5	9		32	.73	44	1.00	51,200	70,400
Lafayette Blvd	7	8		8	13		9	4		2	12		26	.59	37	.84	41,580	59,200
Fort	2	13		9	26		5	5		3	14		19	.43	58	1.32	30,380	92,800
Congress	0	11		3	11		6	0		1	0		10	.23	22	.50	16,000	35,180
Larned	0	18		2	15		4	0		1	0		7	.16	33	.75	11,200	52,800
Jeff-Shelby	1	20		5	5		3	1		5	2		14	.32	28	.64	22,400	44,800
Griswold-Jeff	0	8		2	6		4	5		0	5		6	.14	24	.55	9,600	38,400
Woodbridge-Gris	0	6		1	0		1	0		2	0		4	.09	6	.14	6,400	9,600
Woodward	0	4		5	3		2	5		0	2		7	.16	14	.32	11,200	22,400
Bates	0	9	7.00	0	20	7.33	2	3	8.28	1	9	7.36	3	.07	41	.93	4,800	65,600
Left on car		0			35			47			23				105	2.38		168,000
Totals			41.89			40.08			44.38			39.78	2,481		2,481		3,970,580	3,970,580

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Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	42	78	40	60	220
Number of cars observed	6	18	8	12	44
Per cent. of scheduled cars observed	14.3	23.1	20.0	20.0	20.0

NOTE.—As the Harper Line is at present a loop line no special observations were made through the congested district.

JEFFERSON LINE—WESTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Lincoln	25	0		238	2		151	0		86	0		510	6.0	2	.02	839,700	3,290
Washington	3	0		13	0		8	0		8	0		32	.38	0	0	52,660	0
Roosevelt Pl	0	0		16	0		4	0		6	0		26	.31	0	0	42,800	0
Rivard Blvd	6	0		20	0		3	0		13	0		42	.49	0	0	69,180	0
University Pl	2	0		8	0		8	0		4	0		22	.26	0	0	36,200	0
Lakeland	7	0		8	0		15	0		8	0		38	.45	0	0	62,550	0
Neff	9	0		16	0		7	0		8	1		40	.47	1	.01	65,840	1,646
St. Clair	20	1		29	1		53	0		13	1		115	1.35	3	.04	189,500	4,940
Cadieux	12	1		31	0		11	0		11	0		65	.76	1	.01	107,000	1,646
Harvard Place	1	0		6	0		6	0		2	0		15	.18	0	0	24,700	0
Trolley Station	0	0		5	0		7	0		2	0		14	.16	0	0	23,050	0
Bishop	0	0		3	0		1	0		0	0		4	.05	0	0	6,581	0
Ellair Place	1	0		6	1		5	0		1	0		13	.15	1	.01	21,400	1,646
Kensington	3	0		3	0		2	0		4	0		10	.12	0	0	16,480	0
Corby	0	0		2	1		3	0		0	3		2	.02	0	0	3,290	0
Trolley Station	0	0		5	0		15	0		2	0		5	.06	4	.05	8,230	6,580
Devonshire	0	1		5	0		0	0		0	0		22	.26	0	0	36,210	0
Trombley	1	0		3	0		3	0		0	0		5	.06	1	.01	8,230	1,646
Rifle Range	2	0		0	0		8	0		0	0		7	.08	0	0	11,520	0
Trolley Station	0	0		3	0		0	1		0	0		10	.12	0	0	16,460	0
Queen	0	0		1	0		0	3		2	0		3	.04	1	.01	4,940	1,646
Beaconsfield	0	0		0	0		2	1		7	1		3	.04	3	.04	4,940	4,940
Lake Point	0	0		0	3		1	2		1	1		9	.11	2	.02	14,820	3,290
Maryland	0	0		1	1		3	0		3	1		2	.02	6	.07	3,295	9,880
Wayburn	2	0		0	0		5	2		0	0		7	.08	2	.02	11,520	3,290

JEFFERSON LINE—WESTBOUND—Continued

Alter	20	0	7.81	34	3	6.57	22	6	8.1	16	1	7.57	92	1.10	10	.12	151,500	16,460
Ashland	4	0		11	2		4	0		5	0		24	.28	2	.02	39,500	3,290
Manistique	4	0		10	0		6	0		2	0		22	.26	0	0	36,210	0
Philip	10	0		12	1		6	0		10	0		38	.45	1	.01	62,600	1,646
Hitchings	11	0		11	3		12	0		0	0		44	.52	3	.04	72,400	4,940
Utica	7	1		17	4		4	2		2	3		30	.35	10	.12	49,400	16,460
Oneida	16	0		17	3		5	1		7	0		45	.53	4	.05	74,100	6,580
Newport	15	0		14	2		5	2		10	1		44	.52	5	.06	72,400	8,230
Rusch & Drake	13	0		14	1		3	1		5	0		35	.41	2	.02	57,610	3,290
Lakeview	9	1		9	0		9	0		4	0		31	.36	1	.01	51,000	1,646
Coplin	19	0		17	1		1	1		9	4		46	.54	6	.07	75,750	9,880
Drexel Blvd	4	0		16	1		7	2		12	2		39	.46	5	.06	64,200	8,230
Lenox & Reddig	2	0		2	1		0	0		5	0		9	.11	1	.01	14,810	1,646
Dickerson	5	0		14	2		15	0		4	0		38	.45	2	.02	62,600	3,290
Gray & Emerson	4	0		13	1		3	0		7	0		27	.32	1	.01	44,450	1,646
Continental	1	5		21	2		18	0		8	0		48	.56	7	.08	79,000	11,520
Tennyson	2	2		2	1		7	0		1	0		12	.14	3	.04	19,750	4,940
Bezner	2	0		12	2		6	0		5	0		25	.29	2	.02	41,180	3,290
Hudson	2	2		25	1		48	1		3	0		78	.92	4	.05	128,400	6,580
Connor	11	1		9	2		14	0		3	1		37	.44	4	.05	60,900	6,580
Tennessee	3	0		8	5		1	0		0	0		12	.14	5	.06	19,750	8,250
Clairmont	5	0		10	0		9	1		3	0		27	.32	1	.01	44,450	1,646
Marcelle Place	9	5		35	0		56	0		12	1		112	1.32	6	.07	184,400	9,880
Taft Place	3	6		29	1		13	1		7	0		52	.61	8	.09	85,600	13,160
Detroit Terminal R. R.	1	2		6	0		5	0		0	0		12	.14	2	.02	19,750	3,290
Vanilla Trol. Sta.	1	1		12	3		1	1		0	0		14	.16	5	.06	23,050	8,230
Hart & Vanda	9	3		25	14		1	2		13	7		48	.56	26	.31	79,000	42,800
Lycaste	6	7		33	12		14	6		19	6		72	.85	31	.36	118,500	51,010
Hillger	15	3		34	22		1	4		23	14		73	.86	43	.51	120,200	70,800
Glover	13	0		125	19		62	8		99	10		299	3.52	37	.44	492,100	60,900
St. Jean	26	1	10.14	84	9	9.9	13	3	11.37	20	4	9.9	143	1.68	17	.20	235,400	28,000
Engle	18	0		34	2		6	1		32	2		90	1.06	5	.06	148,100	8,230
Beniteau	20	0		26	3		4	6		18	3		68	.80	12	.14	112,000	19,760
Lillibridge	18	0		36	2		4	1		31	5		89	1.05	8	.09	146,500	13,160
Fairview	29	1		47	6		4	7		27	1		107	1.26	15	.18	176,200	24,700

JEFFERSON LINE—WESTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Le May	16	0		36	8		3	3		25	4		80	.94	15	.18	131,600	24,700
Montclair	23	0		45	5		3	3		18	5		89	1.05	13	.15	146,500	21,400
Hamilton	20	0		36	9		3	3		14	1		73	.86	13	.15	120,200	21,400
St. Clair	26	1		41	7		3	2		11	7		81	.95	17	.20	133,400	28,000
Garland	14	1		22	5		4	3		8	2		48	.56	11	.13	79,100	18,110
Bewick	17	0		20	3		3	3		5	3		45	.53	9	.11	74,100	14,810
Hurlbut	7	2		25	11		3	25		6	6		41	.48	44	.52	67,500	72,450
Cadillac Ave.	14	5		40	19		0	11		8	12		62	.73	47	.55	102,050	77,400
Pennsylvania	11	0		16	4		0	4		7	11		34	.40	19	.22	56,000	31,300
Park View	14	3		39	14		2	3		9	10		64	.75	30	.35	105,400	49,400
McClellan	14	0		19	1		0	4		9	12		42	.49	17	.20	69,180	28,000
Belvidere	15	0		18	1		4	14		9	3		46	.54	18	.21	75,800	29,630
Holcomb	10	1		31	10		0	4		3	1		44	.52	16	.19	72,450	26,350
Hibbard	14	4		17	3		2	2		5	2		38	.45	11	.13	62,600	18,110
Crane	10	3		23	9		1	6		7	2		41	.48	20	.24	67,500	32,900
Fischer	16	0		18	8		1	4		16	6		51	.60	18	.21	84,000	29,640
Burns	7	1		16	2		1	0		3	1		27	.32	4	.05	44,500	6,580
Iroquois	0	4		13	2		4	0		8	1		25	.29	7	.08	41,350	11,530
Seminole	1	0		35	1		2	0		9	2		47	.55	3	.04	77,400	4,940
Trolley Sta.	0	0		7	0		0	1		2	2		9	.11	3	.04	14,820	4,940
Parker	2	0		25	6		3	1		6	4		36	.42	11	.13	59,300	18,110
Van Dyke	6	1		23	8		1	4		8	3		38	.45	16	.19	62,600	26,350
Seyburn	8	0		16	1		2	2		9	4		35	.41	7	.08	57,610	11,530
Baldwin	3	3		14	14		2	3		5	4		24	.28	24	.28	39,470	39,470
Townsend	6	3		10	13		0	5		2	7		18	.21	28	.33	29,620	46,100
Sheridan	2	2		10	5		0	4		4	5		16	.19	16	.19	26,350	26,350
Field	50	65	10.14	69	192	11.1	12	188	11.4	36	91	11.6	167	1.96	536	6.31	275,000	882,000
E. Gr. Blvd.	8	5		97	33		7	4		36	12		148	1.74	54	.64	243,500	88,900
Helen	3	0		10	12		0	4		7	4		20	.24	20	.24	32,940	32,940
Canton	2	4		11	4		0	1		0	4		13	.15	13	.15	21,400	21,400

JEFFERSON LINE—WESTBOUND—Continued

ConcordTrol.Sta.	4	2		15	12		1	1		2	4		22	.26	19	.22	36,210	31,300
Belleview	3	32		71	12		21	4		8	4		103	1.21	52	.61	169,600	85,600
Beaufait	3	1		6	3		0	10		3	10		12	.14	24	.28	19,750	39,500
Meldrum	3	3		32	7		1	4		4	8		40	.47	22	.26	65,850	36,240
Mt. Elliott	8	3	4.0	42	8	3.8	9	4	3.85	5	3	5.00	64	.75	18	.21	105,400	29,620
Leib	5	21		50	9		18	1		9	2		82	.96	33	.39	135,000	54,350
Trolley Station	7	8		27	7		5	0		6	0		45	.53	15	.18	74,100	24,700
Adair	2	0		41	10		10	0		6	3		59	.69	13	.15	97,180	21,400
Elmwood	5	6		27	17		0	3		3	3		35	.41	29	.34	57,600	47,750
Walker	2	4		17	11		15	2		9	1		43	.51	18	.21	70,400	29,620
McDougall	15	70		62	21		19	6		6	6		102	1.20	103	1.21	168,000	169,500
Jos. Campau	10	20		77	18		67	11		18	17		172	2.05	66	.78	283,100	108,600
Trolley Station	0	1		7	2		0	0		1	0		8	.09	3	.04	13,170	4,940
Chene	7	11		64	46		15	23		12	12		98	1.15	92	1.08	161,400	151,500
Dubois	11	10		60	11		10	0		7	5		88	1.04	26	.31	144,900	42,800
St. Aubin	10	8	4.86	56	12	5.4	12	6	4.85	7	7	5.0	85	1.00	33	.39	140,000	54,380
Trolley Station	1	0		5	10		0	0		8	0		14	.16	10	.12	23,050	16,460
Dequindre	2	1		16	2		3	1		6	4		27	.32	8	.09	44,450	13,160
Orleans	7	4		46	14		4	0		9	2		66	.78	20	.24	108,700	32,950
Riopelle	11	6		47	19		9	9		19	3		86	1.01	37	.44	141,600	60,900
Russell	5	1		22	8		4	3		15	6		46	.54	18	.21	75,700	29,650
Rivard	5	6		37	21		7	7		13	3		62	.73	37	.44	102,100	60,900
Trolley Station	3	2		6	9		0	3		1	0		10	.12	14	.16	16,460	23,050
Hastings	9	5		36	13		10	1		14	7		69	.81	26	.31	113,600	42,810
Trolley Station	1	0		6	3		0	0		0	3		7	.08	6	.07	11,530	9,880
Antoine	2	17	4.0	50	17	4.16	8	4	3.77	3	3	3.0	63	.74	41	.48	103,800	67,600
Beaubien	2	22		15	16		6	6		3	4		26	.31	48	.56	42,800	79,000
Brush	1	29		27	70		8	17		20	15		56	.66	131	1.54	92,200	215,800
Randolph	2	19		15	42		11	8		7	10		35	.41	79	.93	57,600	130,000
Bates	0	35		14	140		7	85		6	46		27	.32	306	3.60	44,450	504,000
Woodward	3	130	2.30	32	527	2.4	9	159	3.0	43	201	3.0	87	1.02	1,017	11.98	143,200	1,675,000
Gris. & Jeff.	61	63		32	64		17	3		6	17		116	1.36	147	1.73	191,000	242,000
Larned	2	18		52	66		20	14		18	9		92	1.08	107	1.26	151,500	176,200
Congress	4	27		28	60		17	5		10	10		59	.69	102	1.20	97,200	168,000
Fort	16	75		151	242		84	28		66	54		317	3.73	399	4.70	522,000	657,000

JEFFERSON LINE—WESTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Michigan	47	52		297	388		78	95		186	150		608	7.16	685	8.06	1,001,644	1,126,891
State	40	32		387	244		128	21		164	41		719	8.46	338	3.98	1,184,000	556,500
Gr. River	13	16		281	96		62	5		61	12		417	4.90	129	1.52	686,500	212,400
Wash. Blvd. E. S.	0	0		73	47		17	2		14	5		104	1.22	54	.64	171,200	88,900
Wash. Bvld. W. S.	3	4		4	11		0	0		7	4		14	.16	19	.22	23,050	31,300
Park Place	2	6		28	8		11	0		26	4		67	.79	18	.21	110,400	29,640
Bagley	1	2		17	18		3	2		14	1		35	.41	23	.27	57,600	37,900
Cass	2	14	7.52	33	27	6.4	7	5	8.43	20	7	8.0	62	.73	53	.62	102,200	87,300
Adams	2	2		14	16		3	3		10	1		29	.34	22	.26	47,750	36,210
Elizabeth	1	4		27	18		7	2		14	6		49	.58	30	.35	80,700	49,400
Plum	2	5		15	25		2	12		9	9		28	.33	51	.60	46,100	84,000
Cherry	0	17		2	27		5	2		1	6		8	.09	52	.61	13,170	85,600
High & 3rd	1	4		35	28		3	10		26	24		65	.76	66	.78	107,000	108,600
Henry, Locust	4	13		19	42		14	6		7	26		44	.52	87	1.02	72,450	143,200
Fourth & Pine	4	3		12	22		3	5		10	6		29	.34	36	.42	47,750	59,300
Fifth	1	1		14	49		0	4		5	11		20	.24	65	.76	32,900	107,000
Greenwood	2	6		9	20		5	10		11	4		27	.32	40	.47	44,450	65,850
Bagg	1	4		18	22		4	9		3	17		26	.31	52	.61	42,800	85,650
Sixth	1	2		7	9		1	0		7	6		16	.19	17	.20	26,350	28,000
Hobson	2	7		9	27		1	5		3	17		15	.18	56	.65	24,700	92,200
Brook. Trol. Sta.	7	0		2	6		0	0		2	13		11	.13	19	.22	18,100	31,300
Hobson & Elm	0	0		3	9		4	6		1	2		8	.09	17	.20	13,170	28,000
Brooklyn	2	1		10	15		2	2		3	2		17	.20	20	.24	28,000	32,900
Gibson & Ash	1	1		2	26		1	4		9	10		13	.15	41	.48	21,400	67,500
Lincoln & Sycam.	0	2		6	22		0	11		5	12		11	.13	47	.55	18,110	77,400
Myrtle	0	1		6	17		4	5		4	9		14	.16	32	.38	23,050	52,700
Trumbull	16	11	6.0	65	77	6.75	21	29	6.33	57	17	6.2	159	1.87	134	.58	261,900	220,800
Commonwealth	1	3		3	30		0	5		9	10		13	.15	48	.56	21,400	79,050
National	2	2		0	16		1	4		1	7		4	.05	29	.34	6,580	47,800
Avery	0	1		5	18		0	3		9	12		14	.15	34	.40	23,050	56,000

JEFFERSON LINE—WESTBOUND—Continued

Alexandrine	0	3		4	11		1	3		3	14		8	.09	31	.36	13,170	51,020
12th	1	3		8	40		2	6		2	28		13	.15	77	.91	21,400	126,700
Vermont	1	2		10	36		0	17		6	17		17	.20	72	.85	28,000	118,500
Buchanan	1	7		3	23		1	2		2	14		7	.08	46	.54	11,520	75,800
Wabash Trol. S.	1	0		3	29		1	9		3	10		8	.09	48	.56	13,160	79,100
Fourteenth	47	9	4.01	190	156	3.6	48	56	3.57	125	91	3.8	410	4.82	312	3.67	675,000	514,000
Hancock	0	1		1	9		0	2		0	1		1	.01	13	.15	1,646	21,400
15th & Hancock	0	0		2	9		0	1		0	3		2	.02	13	.15	3,290	21,400
Warren & 16th	18	15		76	194		13	63		30	111		137	1.61	383	4.51	225,500	631,000
Stanton	1	0		2	5		0	5		0	3		3	.04	13	.15	4,940	21,400
Linwood Trol. S.	0	1		2	14		0	6		0	15		2	.02	36	.42	3,290	59,260
Loraine	0	10		1	73		0	28		2	21		3	.04	132	1.55	4,940	217,400
Missouri Trol. S.	2	3		0	30		1	17		0	10		3	.04	60	.71	4,940	98,800
Hudson&Lawton	1	15	5.0	6	117	3.8	1	44	4.62	5	71	4.0	13	.15	247	2.91	21,400	407,000
Stanley	0	8		1	62		1	20		9	33		11	.13	123	1.45	18,110	202,600
McGraw	1	7		2	55		2	21		3	41		8	.09	124	1.46	13,160	204,200
Hooker	0	7		0	36		0	11		0	30		0	0	84	.99	0	138,200
Wreford	0	3		0	33		0	19		0	25		0	0	80	.94	0	131,600
Chope	0	5		1	25		0	17		0	14		1	.01	61	.72	1,646	100,400
Roosevelt	0	16		0	50		0	10		1	21		1	.01	97	1.14	1,646	159,600
Taft	0	5		0	9		0	7		0	27		0	0	48	.56	0	79,000
Vinewood	0	2		0	21		0	17		0	11		0	0	41	.48	0	67,600
No. Gr. Blvd S. S	0	21		1	161		0	75		1	75		2	.02	332	3.91	3,290	547,000
No. Gr. Blvd N.S.	0	4		0	11		0	7		0	11		0	0	33	.39	0	54,350
Lothrop	0	7		2	45		0	16		0	26		2	.02	94	1.10	3,290	154,600
Northwestern	0	8		0	36		0	19		0	28		0	0	91	1.07	0	149,700
Hogarth & Allendale	0	8	4.0	0	56	4.5	0	24	5.25	0	33	4.0	0	0	121	1.42	0	199,300
Whitney&Pacific	0	2		0	39		0	14		0	22		0	0	77	.91	0	126,700
Columbus	0	5		0	37		0	13		0	21		0	0	76	.89	0	125,100
Montgomery	0	6		0	30		0	9		0	25		0	0	70	.82	0	115,200
Tireman Place	0	6		0	6		0	3		0	7		0	0	22	.26	0	36,240
Thornton	0	2		0	5		0	3		0	9		0	0	19	.22	0	31,300
Maplewood	0	1		0	7		0	1		0	1		0	0	10	.12	0	16,460
Gr. River Loop	0	12	2.1	0	108	2.9	0	41	2.82	0	65	2.0	0	0	226	2.66	0	372,000
Totals			71.88			71.28			71.36			73.07	10,126		10,126		16,672,358	16,672.358

JEFFERSON LINE—WESTBOUND

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	769	0		1,504	0		412	0		2,685	44.75	0	0
Randolph	2	19		17	38		9	5		28	.46	62	1.03
Bates	1	53		20	97		5	32		26	.43	182	3.03
Woodward	29	237		28	388		22	75		79	1.31	700	11.66
Griswold	4	37		30	45		16	5		50	.83	87	1.45
Larned	10	20		46	40		34	14		90	1.5	74	1.23
Congress	9	30		30	48		21	3		60	1.00	81	1.35
Fort	60	96		168	182		86	18		314	5.28	296	4.93
Michigan	88	89		280	239		70	76		438	7.3	404	6.73
State	82	43		282	162		120	29		484	8.06	234	3.9
Grand River	20	34		158	64		62	5		240	4.00	103	1.71
Washington	9	15		65	28		20	3		94	1.57	46	.77
Park	11	8		31	13		3	1		45	.75	22	.37
Bagley	2	18		10	19		2	1		14	.23	38	.63
Cass	8	14		24	22		21	8		53	.88	44	.73
Final		391			1,308			628				2,327	38.78

Summary of traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
No. of cars scheduled	89	186	80	123	478
No. of cars observed	29	74	21	21	145
Per cent. of scheduled cars observed	32.6	39.80	26.25	17.07	30.35

JEFFERSON LINE—EASTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Philadelphia	56	0		78	0		38	0		37	0		209	2.62	0	0	343,070	0
Maplewood	3	0		6	0		4	0		3	0		16	.20	0	0	26,280	0
Thornton	8	0		6	0		4	0		12	0		30	.37	0	0	49,970	0
Tireman Pl	4	0		7	0		7	0		13	0		31	.38	0	0	50,900	0
Vancouver	11	0		42	0		29	0		10	0		92	1.14	0	0	151,100	0
Oregon	21	0		40	0		15	0		11	0		87	1.07	0	0	142,900	0
Pacific	13	0		25	0		25	0		4	0		67	.83	0	0	110 100	0
Allendale	30	0	2.6	60	0	2.5	27	0	2.15	29	0	2.6	146	1.80	0	0	240,000	0
Seebaldt	27	0		39	0		11	0		18	0		95	1.17	0	0	156,000	0
Larchmont	22	0		30	0		16	0		17	0		85	1.05	0	0	139,600	0
No.Gr.Blvd.N.S.	46	0		89	1		36	0		42	1		213	2.63	2	.02	350,100	3,284
No.Gr.Blvd.S.S.	13	0		32	0		17	0		24	1		86	1.06	1	.01	141,300	1,642
Vinewood	10	1		39	1		16	0		4	1		69	.85	3	.04	113,300	4,928
Taft	7	1		24	0		3	0		9	0		43	.53	1	.01	70,610	1,642
Roosevelt	14	1		34	0		23	0		3	0		74	.91	1	.01	121,500	1,642
Chope	31	1		30	0		9	0		9	2		79	.98	3	.04	129,500	4,928
Wreford	26	0		28	1		11	0		12	0		77	.95	1	.01	126,600	1,642
Hooker	10	0		10	0		3	0		10	0		33	.41	0	0	54,200	0
McGraw	29	1		39	3		12	2		15	0		95	.17	6	.07	156,000	9,855
Stanley	26	1		52	7		46	3		34	2		158	1.95	13	.16	260,000	21,350
Hudson	59	1	4.9	92	7	4.86	15	4	4.36	47	1	3.75	213	2.63	13	.16	349,900	21,350
Missouri	21	4		23	3		12	0		24	1		80	.99	8	.10	131,500	13,140
Kirby	36	3		41	0		25	1		20	0		122	1.51	4	.05	200,700	6,570
Linwood	9	0		5	2		11	1		9	0		34	.42	4	.05	55,840	6,570
Stanton	6	0		17	3		2	0		1	0		26	.32	3	.04	42,700	4,928
Warren	136	105		197	143		40	148		94	75		467	5.02	471	5.82	766,300	773,600
16th	11	2		16	9		9	2		4	1		40	.49	14	.17	65,700	23,000
15th	2	2		18	1		0	1		3	0		23	.28	4	.05	37,770	6,570
Fourteenth	66	17	5.0	130	40	3.91	25	18	3.37	84	43	4.4	305	3.77	118	1.46	500,000	193,800
Breckenridge	6	1		16	1		6	0		14	0		42	.52	2	.02	68,990	3,284

JEFFERSON LINE—EASTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Wabash	10	1		24	7		19	0		7	7		60	.74	15	.19	98,550	24,630
Buchanan	15	0		27	0		8	0		18	2		68	.84	2	.02	111,900	3,284
Vermont	9	2		22	7		5	0		25	4		61	.75	13	.16	100,200	21,350
12th	20	3		42	7		18	4		17	4		97	1.20	18	.22	159,300	29,570
Alexandrine	4	0		19	0		1	1		7	3		31	.38	4	.05	50,900	6,570
Avery	8	0		24	2		9	2		9	10		50	.62	14	.17	82,130	23,000
National	12	1		6	3		3	1		5	4		26	.32	9	.11	42,700	14,780
Magnolia	20	6		19	3		4	1		7	0		50	.62	10	.12	82,130	16,420
Trumbull	26	11	4.5	104	34	4.66	19	19	4.36	22	35	4.0	171	2.11	99	1.22	280,900	162,600
Myrtle	8	1		13	3		4	9		6	5		31	2.28	18	.22	50,900	29,570
Sycamore	14	3		19	4		3	1		5	5		41	.51	13	.16	67,330	21,350
Ash	14	3		12	6		9	3		10	4		45	.56	16	.20	74,900	26,280
Brooklyn Trol. S.	5	0		20	6		2	4		7	7		34	.42	17	.21	55,820	27,920
Elm	6	4		27	4		1	2		4	4		38	.47	14	.17	62,400	23,000
Bagg	12	5		59	17		33	4		24	19		128	1.58	45	.56	210,200	73,900
Perry	13	5		23	11		8	1		7	5		51	.63	22	.27	83,780	36,140
Fifth	11	4		22	10		13	7		11	3		57	.70	24	.30	93,610	39,400
Fourth	15	6		17	7		17	3		7	3		56	.69	19	.23	91,980	31,200
Henry & Locust	26	13		38	20		9	8		18	12		91	1.12	53	.65	149,500	87,200
High and 3rd	6	12		16	11		16	4		11	12		49	.61	39	.48	80,500	64,400
Cherry	4	3		37	7		23	2		9	4		73	.90	16	.20	119,800	26,280
Plum	5	1		21	8		17	6		6	0		49	.61	15	.19	80,500	24,640
Orchard	4	3		25	17		9	4		10	3		48	.59	27	.33	78,820	44,340
Adams	2	8		2	10		1	2		6	9		11	.14	29	.36	18,070	47,640
Cass	23	6	6.02	33	14	6.0	14	13	6.0	20	8	5.83	90	1.11	41	.51	147,900	67,300
Bagley	1	1		21	12		2	2		7	6		31	.38	21	.26	50,910	34,490
Park Place	3	24		8	15		6	0		6	9		23	.28	48	.59	37,770	78,820
Washington Blv.	5	33		11	96		9	15		1	26		26	.32	170	1.32	42,700	279,200
Wash. Blvd. E. Side	0	9		1	33		0	2		1	2		2	.02	46	.57	3,285	75,550
Griswold	41	142		141	297		87	64		64	72		333	4.11	575	7.10	547,000	944,200
State	9	65		45	98		50	73		34	45		138	1.70	281	3.47	226,700	461,300
Griswold	42	42		209	219		112	38		73	46		436	5.38	345	4.26	716,200	566,500
Michigan	155	115		280	220		120	108		162	132		717	8.86	575	7.10	1,176,000	944,500
Fort	81	128		176	164		91	46		71	35		419	5.18	373	4.61	688,100	612,500
Congress	18	28		77	63		60	5		12	17		167	2.06	113	1.40	274,400	185,600

JEFFERSON LINE—EASTBOUND—Continued

Larned	6	25		26	47		19	7		14	6		65	.80	85	1.05	106,750	139,600
Jefferson	7	19		29	29		24	9		14	13		74	.91	70	.86	121,500	114,900
Woodward	59	18	7.0	300	65	8.75	103	24	8.55	160	33	7.5	622	7.68	140	1.73	1,015,000	230,000
Bates	14	5		37	17		30	3		18	2		99	1.22	27	.33	162,700	44,340
Randolph	4	16		41	21		18	6		13	7		76	.94	50	.62	124,800	82,075
Brush	6	19		32	35		7	7		11	8		56	.69	69	.85	92,000	113,200
Beaubien	1	8		3	10		0	0		1	3		5	.06	21	.26	8,212	34,500
Antoine	9	25	3.0	32	31	2.48	10	6	2.37	8	4	3.0	59	.73	66	.82	96,920	108,200
Trolley Station	0	18		4	5		4	5		2	1		10	.12	29	.36	16,420	47,630
Hastings	6	14		13	25		10	23		6	5		35	.43	67	.83	57,480	110,000
Trolley Station	1	0		1	1		6	2		10	0		18	.22	3	.04	29,570	4,926
Rivard	2	13		18	22		8	10		6	13		34	.42	58	.72	55,840	95,230
Russell	0	7		4	21		2	9		8	4		14	.17	41	.51	23,000	67,320
Riopelle	9	11		5	31		14	11		7	10		35	.43	63	.78	57,470	103,200
Orleans	4	5		5	23		7	8		3	3		19	.23	39	.48	31,200	64,050
Dequindre	2	2		5	23		1	13		0	7		8	.10	45	.56	13,140	73,900
Trolley Station	0	2		2	8		0	2		0	0		2	.02	12	.15	3,285	19,710
St. Aubin	10	9	3.71	10	44	3.84	14	12	4.24	7	11	3.5	41	.51	76	.94	67,320	124,700
Dubois	2	9		8	57		4	14		7	14		21	.26	94	.16	34,490	154,300
Chene	21	20		31	36		20	23		21	12		93	1.15	91	1.12	152,700	149,300
Trolley Station	1	0		1	5		1	1		3	0		6	.07	6	.07	9,858	9,858
Jos. Campau	5	24		23	60		20	25		7	24		55	.68	133	1.61	90,350	218,300
McDougall	3	5		9	51		20	20		4	11		36	.44	87	1.07	59,120	142,600
Walker	2	5		9	19		8	6		6	5		25	.31	35	.43	41,060	57,490
Elmwood	2	6		18	13		7	5		4	6		31	.27	30	.37	50,900	49,280
Adair	0	14		9	18		29	7		1	9		39	.47	48	.59	64,040	78,820
Trolley Station	0	1		14	10		11	3		0	3		25	.31	17	.21	41,060	27,930
Leib	1	15		18	17		13	7		7	6		39	.48	45	.56	64,050	73,900
Mt. Elliott	4	15	4.6	11	19	5.22	6	14	5.08	4	9	5.0	25	.31	57	.70	41,060	93,600
Meldrum	1	12		20	32		1	11		7	14		29	.36	69	.85	47,630	113,300

JEFFERSON LINE—EASTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Beaufait	3	10		3	11		7	5		5	1		18	.22	27	.33	29,570	44,350
Bellevue	6	30		13	31		11	3		3	5		33	.41	69	.85	54,206	113,200
Concord	3	4		6	47		8	41		6	22		23	.28	114	1.41	37,780	187,250
Canton	1	2		2	14		3	13		0	8		6	.07	37	.46	9,858	60,750
Helen	2	1		4	20		3	3		3	4		12	.15	28	.35	19,710	45,990
E. Gr. Blvd. W. Side	6	11		18	70		17	14		9	25		50	.62	120	1.48	82,130	197,000
Field	107	17		149	21		86	9		89	46		431	5.32	93	1.15	707,900	152,700
Sheridan	4	0		5	14		0	7		6	11		15	.19	32	.40	24,640	52,550
Townsend	5	3		7	10		1	12		16	7		29	.36	32	.40	47,620	52,550
Baldwin	2	8		7	23		4	3		6	2		19	.23	36	.44	31,200	59,120
Seyburn	2	3	5.6	3	16	4.75	1	3	4.48	8	10	11.0	14	.17	32	.40	23,000	52,550
Van Dyke	0	2		6	22		6	6		6	12		18	.22	42	.52	29,570	68,980
Parker	1	5		2	9		1	3		3	14		7	.09	31	.38	11,490	50,900
Trolley Station	0	1		1	12		0	1		0	1		1	.01	15	.19	1,642	24,640
Seminole	0	4		3	7		0	9		6	14		9	.11	34	.42	14,780	55,840
Iroquois	0	2		3	13		1	4		3	8		7	.09	27	.33	11,490	44,350
Burns	0	1		4	8		1	6		1	4		6	.07	19	.23	9,858	31,200
Fischer	1	5		3	13		1	19		6	7		11	.14	44	.54	18,070	72,300
Crane	5	2		6	17		6	24		3	11		20	.25	54	.67	32,850	88,690
Hibbard	0	6		1	14		0	15		1	7		2	.02	42	.52	3,284	69,000
Holcomb	1	7		2	19		0	17		6	4		9	.11	47	.58	14,780	77,200
Belvidere	1	2		3	12		0	15		0	16		4	.05	45	.56	6,570	72,900
McClellan	4	3		4	17		1	12		0	9		9	.11	41	.51	14,780	67,320
Park View	4	4	3.57	20	20	4.13	3	15	5.30	14	31	4.0	41	.51	70	.86	67,320	114,900
Pennsylvania	1	2		4	14		1	18		3	11		9	.11	45	.56	14,780	72,900
Cadillac Ave.	26	8		10	29		4	20		13	23		53	.65	80	.99	87,020	131,400
Hurlbut	4	3		10	15		2	20		7	9		23	.28	47	.58	37,780	77,200
Bewick	4	5		4	11		2	10		0	6		10	.12	32	.40	16,420	52,550
Garland	2	4		4	21		0	16		11	21		17	.21	62	.77	27,920	101,800
St. Clair	4	3		3	32		2	23		6	16		15	.19	74	.91	24,640	121,500
Hamilton	3	2		0	32		1	31		5	29		9	.11	94	1.16	14,780	154,300
Meadowbrook	0	5		2	12		0	4		0	9		2	.02	30	.37	3,284	49,260
Montclair	0	9		2	43		2	32		1	26		5	.06	110	1.36	8,210	180,500
Lemay	2	6		8	40		0	29		2	25		12	.15	100	1.24	19,710	164,200
Fairview	3	5		2	40		2	37		5	26		12	.15	108	1.33	19,710	177,300

JEFFERSON LINE—EASTBOUND—Continued

Lillibridge	3	9		1	48		2	37		2	10		8	.10	104	1.28	13,140	170,800
Beniteau	0	4		0	22		0	15		8	21		8	.10	62	.77	13,140	101,800
Engel	1	6		2	23		0	12		1	13		4	.05	54	.67	6,570	88,690
St. Jean	9	7	5.0	18	62	4.8	8	20	5.66	10	25	4.2	45	.56	114	.41	73,900	187,250
Glover	27	15		56	73		49	21		34	29		166	2.05	138	1.70	272,900	226,400
Hillger	12	12		27	36		41	13		17	18		97	1.20	79	.98	159,200	129,600
Lycaste	9	33		10	27		11	17		5	13		35	.43	90	1.11	57,500	147,700
Vanda	3	28		2	19		2	4		0	10		7	.09	61	.75	11,490	100,200
Vanilla Trol. S.	3	4		0	3		2	4		0	0		5	.06	11	.14	8,212	18,070
Detroit Term. R. R.	1	3		0	7		1	0		2	0		4	.05	10	.12	6,570	16,420
Taft Pl.	1	17		3	13		14	1		0	5		18	.23	36	.44	29,570	59,120
Chalmers T. S.	2	23		5	20		25	3		0	0		32	.40	46	.57	52,550	75,550
Clairmont	0	4		1	10		1	5		0	5		2	.02	24	.30	3,284	39,410
Tennessee	0	2		0	10		1	5		0	7		1	.01	24	.30	1,642	39,410
Conner	1	6		3	12		0	4		0	16		4	.05	38	.47	6,570	62,400
Hudson Trol. S.	0	22		3	17		1	1		0	2		4	.05	42	.52	6,570	69,000
Race Track	0	9		1	14		0	0		0	16		1	.01	39	.48	1,642	64,060
Tennyson	0	3		0	10		0	5		0	2		0	0	20	.25	0	32,850
Continental	1	7		0	12		1	14		0	6		2	.02	39	.48	3,284	64,060
Emerson	0	3		4	7		1	12		0	16		5	.06	38	.47	8,212	62,400
Whitman	1	7		1	16		2	17		0	22		4	.05	62	.77	6,570	101,800
Reddig & Lenox	0	7		0	7		0	8		2	10		2	.02	32	.40	3,284	52,520
Hupp	0	7		1	22		0	23		1	17		2	.02	69	.35	3,284	113,300
Evans & Coplin	0	15		3	12		0	17		2	22		5	.06	66	.82	8,212	108,300
Piper	0	5		2	8		1	20		0	24		3	.04	57	.70	4,928	93,600
Rusch & Drake	0	7		0	21		0	20		5	16		5	.06	64	.79	8,212	105,100
Coffin	0	5		0	15		1	27		0	18		1	.01	65	.80	1,642	106,700
Lakeview	0	1		1	10		0	16		0	20		1	.01	47	.58	1,642	77,200
Chalmers	2	10		1	22		0	20		1	11		4	.05	63	.78	6,570	103,500
Marlborough	1	5		0	15		0	11		2	14		3	.04	45	.56	4,928	72,900

JEFFERSON LINE—EASTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Philip	1	1		0	5		4	6		1	10		6	.07	22	.27	9,858	36,140
Manistique	0	2		2	4		0	5		4	6		6	.07	17	.21	9,858	27,920
Ashland	1	5		0	8		0	12		4	8		5	.06	33	.41	8,212	54,200
Alter	9	35	9.86	23	32	9.08	10	25	10.57	9	41	8.0	51	.63	133	.64	83,780	218,400
Wayburn	0	0		3	1		0	1		0	1		3	.04	3	.04	4,928	4,928
Maryland	0	0		1	0		0	2		0	1		1	.01	3	.04	1,642	4,928
Lake Point	0	1		0	1		0	2		0	0		0	0	4	.05	0	6,570
King	3	1		1	8		0	0		0	0		4	.05	9	.11	6,590	14,780
Queen	0	0		0	0		0	6		0	0		0	0	6	.07	0	9,858
Trolley Station	0	1		0	0		0	0		0	1		0	0	2	.02	0	3,284
Rifle Range	0	0		0	0		0	1		0	0		0	0	1	.01	0	1,642
Trombley	0	3		0	1		0	0		0	1		0	0	5	.06	0	8,212
Devonshire	3	0		0	2		0	9		0	4		3	.04	15	.19	4,928	24,640
Trolley Station	0	5		1	5		1	0		0	1		2	.02	11	.14	3,284	18,070
Corby	0	0		0	3		0	3		0	4		0	0	10	.12	0	16,420
Ellair Pl	0	2		0	3		0	0		0	5		0	0	10	.12	0	16,420
Bishop	1	4		1	2		0	6		0	2		2	.02	14	.17	3,284	23,000
Trolley Station	0	1		0	2		0	1		0	2		0	0	6	.07	0	9,858
Harvard Pl	0	0		0	4		0	5		0	5		0	0	14	.17	0	23,000
Cadieux	1	2		0	19		0	11		1	8		2	.02	40	.49	3,284	65,700
St. Claire	0	11		0	42		0	40		0	23		0	0	116	1.43	0	190,500
Neff	0	5		0	16		0	8		0	11		0	0	40	.49	0	65,700
Lakeland	0	7		0	14		0	10		0	7		0	0	38	.47	0	62,400
University Pl	0	5		0	13		0	13		0	1		0	0	32	.40	0	52,550
Rivard Blvd	0	3		0	21		0	24		0	4		0	0	52	.64	0	85,400
Roosevelt Pl	0	6		0	4		0	9		0	19		0	0	38	.47	0	62,400
Washington	0	11		0	7		0	7		0	3		0	0	28	.35	0	46,000
Lincoln	0	4		0	4		0	1		0	7		0	0	16	.20	0	26,280
Country Cl	0	134	8.0	0	129	7.95	0	66	9.36	0	72	7.35	0	0	401	4.95	0	658,600
Totals			73.36			73.92			75.85			74.13	10,155		10,155		16,672,358	16,672,358

JEFFERSON LINE—EASTBOUND

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Aver.	Off	Av. per car
Initial	1,171	0		1,423	0		361	0		2,955	49.25	0	0
Cass	39	6		33	16		19	6		91	1.51	28	.46
Bagley	5	11		19	7		2	3		26	.43	21	.35
Park Place	5	16		11	24		7	5		23	.38	45	.75
Washington	7	24		13	70		18	11		38	.63	105	1.75
Griswold	56	176		123	290		95	28		274	4.56	494	8.23
State	112	108		250	280		96	61		458	7.63	449	7.48
Michigan	216	123		330	186		82	58		628	10.47	367	6.10
Fort	122	148		192	156		72	24		386	6.43	328	5.47
Congress	19	51		83	54		26	6		128	2.13	111	1.85
Larned	14	40		53	44		9	11		76	1.27	95	1.58
Jefferson	10	44		65	38		20	6		95	1.58	88	1.47
Woodward	182	29		394	49		63	6		639	10.65	84	.40
Bates	14	20		82	16		10	1		106	1.77	37	.62
Randolph	4	19	1.71	45	23	3.12	8	3	.92	57	.95	45	.75
Final		1,161			1,863			659				3,683	61.38

Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	81	176	60	161	478
Number of cars observed	34	65	22	21	142
Per cent. of scheduled cars observed	42.00	36.90	36.65	13.02	29.72

MICHIGAN LINE—WESTBOUND—MACK DIVISION

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
St. Clair	77	0		130	0		56	0		23	0		286	9.87	0	0	831,700	0
Garland	10	0		11	1		0	0		5	0		26	.90	1	.03	75,630	2,909
Bewick	9	0		16	1		0	0		4	0		29	1.00	1	.03	84,350	2,910
Hurlbut	6	0		16	1		2	0		5	1		29	1.00	2	.07	84,350	5,817
Cadillac	25	0		29	0		4	0		8	1		66	2.27	1	.03	192,000	2,909
Pennsylvania	18	0		25	1		4	0		6	1		53	1.83	2	.07	154,200	5,817
Trolley Station	2	0		6	0		2	1		5	0		15	.52	1	.03	43,630	2,909
McClellan	18	0		34	2		3	1		11	0		66	2.27	3	.10	192,000	8,722
Belvidere	6	0		16	2		6	2		14	0		42	1.45	4	.14	122,200	11,630
Holcomb	9	0		11	0		1	0		9	1		30	1.03	1	.03	87,220	2,910
Rohns	10	0		17	0		4	0		3	0		34	1.17	0	0	98,880	0
Rolfs-Crane T. S.	22	0		32	1		2	2		13	0		69	2.21	3	.10	200,710	8,722
Fischer	14	0		12	0		1	0		12	0		39	1.34	0	0	113,400	0
Newland	6	0	5.33	13	1	4.30	0	0	4.00	4	0	4.67	23	.79	1	.03	66,960	2,910
Seneca	5	0		5	0		0	4		5	0		15	.52	4	.14	43,630	11,640
Chippewa	3	1		7	1		0	0		1	0		11	.38	2	.07	31,990	5,817
Stephens	3	0		10	0		2	0		1	0		16	.55	0	0	46,540	0
Maxwell	9	0		12	0		1	0		4	0		26	.90	0	0	75,630	0
Parker	6	0		4	0		0	0		6	0		16	.55	0	0	46,540	0
Van Dyke	7	0		12	1		3	0		11	1		33	1.13	2	.07	95,990	5,817
Beals	14	0		20	4		8	0		15	3		57	2.04	7	.24	165,800	20,360
Baldwin	14	0		28	6		5	0		15	0		62	2.14	6	.20	180,300	17,460
Townsend	11	0		23	5		7	0		17	0		58	2.00	5	.17	168,700	14,540
Sheridan	8	2		22	3		0	0		8	1		38	1.31	6	.20	110,500	17,450
Field	15	21		25	0		1	0		7	0		48	1.65	21	.72	139,700	61,100
E. G. Blvd	9	2		38	4		5	0		6	2		58	2.00	8	.27	168,700	23,270
Helen	8	0	4.67	19	0	5.37	1	2	4.67	3	1	5.00	31	1.07	3	.10	90,170	8,722
Canton	6	1		18	4		3	0		5	2		32	1.1	7	.24	93,080	20,360
Concord	9	1		7	2		6	0		11	1		33	1.13	4	.14	95,990	11,630
Bellevue	2	1		11	2		21	1		2	1		36	1.24	5	.17	104,700	14,540

MICHIGAN LINE—WESTBOUND—Continued—MACK DIVISION

Beaufait	1	2		4	1		9	1		0	0		14	.48	4	.14	40,730	11,640
Meldrum	0	0		3	1		4	1		0	0		7	.24	2	.07	20,360	5,817
Mt. Elliott	12	91		27	104		9	29		21	57		69	2.38	281	9.70	200,700	817,500
Trolley Station	4	0		7	1		4	6		2	2		17	.59	9	.31	49,450	26,180
Elmwood	4	0		3	1		0	0		4	0		11	.38	1	.03	31,990	2,909
Gratiot	5	3	5.33	14	16	4.57	4	5	5.50	5	9	4.17	28	.97	33	1.13	81,450	95,990
Total Mack time			15.33			14.24			14.17			13.84						

MICHIGAN LINE—WESTBOUND Continued—GRATIOT DIVISION

Cooper	46	0		82	0		36	0		75	0		239	5.53	0	0	696,300	0
May	11	0		8	0		5	0		12	0		36	.84	0	0	104,600	0
McClellan T. S.	20	0		17	0		11	0		27	0		75	1.74	0	0	218,200	0
Belvidere	32	0		21	2		1	0		18	2		72	1.67	4	.09	209,400	11,640
Holcomb T. S.	25	0		9	0		4	0		16	2		54	1.25	2	.05	157,000	5,820
Rohns T. S.	23	0		18	1		7	0		36	2		84	1.95	3	.07	244,200	8,730
Crane	25	0		22	1		3	0		29	2		79	1.84	3	.07	230,000	8,730
Fischer	26	0		17	2		1	0		21	1		65	1.51	3	.07	189,000	8,730
Newland	10	0		1	0		7	0		12	0		30	.70	0	0	87,300	0
Seneca	14	0		13	0		2	0		21	1		50	1.16	1	.02	145,500	2,909
Chippewa	26	0		24	1		8	0		16	1		74	1.72	2	.05	215,200	5,820
Stephens	11	0		16	0		4	0		4	1		35	.81	1	.02	101,800	2,909
Maxwell	22	0	5.78	12	0	5.15	4	0	4.75	15	0	4.53	53	1.23	0	0	154,200	0
Parker	21	0		11	2		1	0		15	0		48	1.12	2	.05	139,600	5,820
Van Dyke	53	0		22	3		9	0		36	1		120	2.79	4	.09	349,700	11,640

MICHIGAN LINE—WESTBOUND—Continued—GRATTIOT DIVISION

Treet:	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Seyburn	11	0		17	0		8	2		11	4		47	1.09	6	.14	136,600	17,450
Baldwin	15	1		24	1		8	0		24	0		71	1.65	2	.05	206,600	5,820
Townsend	26	0		21	1		5	0		17	1		69	1.60	2	.05	200,900	5,820
Sheridan	21	1		36	2		11	2		23	1		91	2.11	6	.14	264,900	17,450
Field	11	1		22	2		5	1		7	0		45	1.05	4	.09	131,000	11,640
E. Gr. Blvd. E.	21	0		18	3		4	0		34	3		77	1.79	6	.14	224,100	17,450
E. Gr. Blvd. W.	3	0		4	0		5	0		5	0		17	.39	0	0	49,500	0
Helen	20	1		21	3		6	0		33	2		80	1.86	6	.14	232,900	17,450
Canton	12	1		15	0		7	0		23	1		57	1.33	2	.05	166,000	5,820
Concord	16	0	5.11	10	1	5.00	7	6	3.75	22	9	4.93	55	1.28	16	.37	160,100	46,554
Bellevue	14	0		24	1		11	2		10	1		59	1.37	4	.09	171,600	11,640
Beaufait	8	0		6	3		5	4		9	2		28	.65	9	.21	81,482	26,200
Meldrum	4	3		14	3		10	8		10	3		38	.88	17	.39	110,600	49,500
Mt. Elliott	61	171		89	92		85	26		87	132		322	7.49	421	9.80	937,500	1,225,000
Superior	2	0		4	2		2	2		1	5		9	.21	9	.21	26,200	26,200
Fink T. Sta.	7	0		5	5		1	0		0	0		13	.30	5	.12	37,800	14,550
Sylvester	0	0		17	0		1	7		3	2		21	.29	9	.13	61,100	26,200
Leland T. Station	7	3		6	0		0	3		6	3		19	.26	9	.13	55,260	26,200
Moran T. Station	6	0		10	2		1	5		15	1		32	.44	8	.11	93,100	23,280
St. Joseph	6	4	4.89	7	2	5.29	5	6	5.5	4	10	4.73	22	.31	22	.31	64,009	64,009

MICHIGAN LINE—WESTBOUND—Continued—BOTH DIVISIONS

Mack & Collins	3	6		20	21		2	6		11	14		36	.50	47	.65	104,896	136,600
Ludden	4	0		6	2		1	5		0	0		11	.15	7	.10	32,000	20,350
McDougall	11	1		17	2		1	4		4	1		33	.46	8	.11	96,000	23,280
Mitchell	1	2		6	10		2	4		4	5		13	.18	21	.29	37,800	61,100
Jos. Campau	6	4		17	13		2	6		5	10		30	.42	33	.46	87,300	96,000
Grandy	11	49		20	35		3	17		3	27		37	.51	128	1.78	107,700	372,500
Arndt	0	0		5	6		1	4		2	1		8	.11	11	.15	23,290	32,000
Chene	24	25		56	47		12	15		39	34		131	1.82	121	1.68	381,200	352,100
Brewster	2	0		9	9		5	6		6	1		22	.31	16	.22	64,000	46,550
Dubois	11	2		14	12		3	2		10	2		38	.53	18	.25	110,100	52,400

MICHIGAN LINE—WESTBOUND—Continued—BOTH DIVISIONS

St. Aubin	8	7	4.50	21	14	4.64	4	6	3.75	17	11	4.71	50	.69	38	.53	145,600	110,572
Adelaide	4	2		12	9		3	1		1	7		20	.28	19	.26	58,200	55,250
Trolley Station	1	7		7	6		4	3		8	2		20	.28	18	.25	58,200	52,400
Orleans	7	14		24	12		3	11		8	11		42	.58	48	.67	122,200	139,700
Riopelle	16	18		22	29		7	13		6	9		51	.71	69	.96	148,500	200,900
Russell	10	13		24	12		11	8		6	12		51	.71	45	.63	148,500	131,100
Rivard	9	7		10	8		4	2		6	7		29	.40	24	.33	84,400	69,820
Trolley Station	1	0		0	2		0	0		0	2		1	.01	4	.06	2,910	11,640
Maple	2	8		4	6		1	3		0	2		7	.10	19	.26	20,350	55,250
Hastings	17	20		32	18		11	25		17	24		77	1.07	87	1.21	224,100	253,100
Trolley Station	2	6		4	2		1	2		0	0		7	.10	10	.14	20,350	29,090
Antoine	2	5		16	8		6	1		16	9		40	.55	23	.32	116,400	66,900
Raynor	1	6		2	6		5	0		3	6		11	.15	18	.25	32,000	52,400
Beaubien	4	9		11	11		3	6		2	2		20	.28	28	.39	58,200	81,400
Brush	9	17		18	35		19	16		14	22		60	.83	90	1.25	174,500	262,100
Randolph	33	59		14	69		14	15		24	52		85	1.18	195	2.71	247,000	567,200
Macomb	13	64		29	111		31	29		20	40		93	1.29	244	3.39	270,600	709,500
Monroe	5	15		20	61		41	6		34	27		100	1.39	109	1.51	290,900	317,100
Library	2	6		7	26		15	5		15	10		39	.54	47	.65	113,500	136,700
Farmer	5	43		52	106		40	11		48	37		145	2.01	197	1.73	422,000	573,200
Woodward	68	217	10.33	184	287	9.50	73	62	10.00	95	203	9.54	420	5.84	769	11.05	1,223,000	2,239,000
Griswold	93	87		330	184		115	40		162	97		700	9.72	408	5.68	2,037,000	1,189,000
Shelby	12	11		78	37		22	7		25	15		137	1.90	70	.97	398,600	203,600
Trolley Station	5	2		13	2		0	0		0	0		18	.25	4	.06	52,360	11,630
Washington	6	11		21	12		7	0		11	19		45	.62	42	.58	130,900	122,300
Park	10	27		30	26		10	5		13	14		63	.87	72	1.00	183,200	209,400
Abbott	3	5		9	9		2	0		5	3		19	.26	17	.24	55,300	49,460
First	5	3		8	8		12	1		6	7		31	.43	19	.26	90,200	55,280
Second	5	7		8	15		5	6		3	6		21	.29	34	.47	61,100	98,900
Third	8	10		25	14		12	2		15	9		60	.83	35	.49	174,500	101,800

MICHIGAN LINE—WESTBOUND—Continued—BOTH DIVISIONS

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Fourth	5	7		10	21		9	8		4	6		28	.39	42	.58	81,400	122,300
Fifth	6	3		5	25		5	11		5	12		21	.29	51	.71	61,100	148,400
Sixth	1	6		4	24		6	13		1	23		12	.17	66	.92	34,900	192,000
Brooklyn	0	9		7	13		4	9		4	13		15	.21	44	.61	43,650	128,000
Eighth	1	14		7	18		3	4		2	5		13	.18	41	.57	37,800	119,300
Trumbull	22	1		13	14		20	12		11	16		66	.92	43	.60	192,000	125,200
Tenth	0	3		4	3		3	4		1	2		8	.11	12	.17	23,270	34,900
National	2	4		2	8		2	8		1	4		7	.09	24	.33	20,360	69,810
Harrison	4	7		3	13		1	9		0	14		8	.11	43	.60	23,270	125,200
Twelfth	1	14		2	20		3	10		1	22		7	.09	66	.92	20,360	192,000
Vermont	1	4		12	15		4	10		8	12		25	.35	41	.57	72,700	119,300
Wabash	1	3		11	15		4	6		0	16		16	.22	40	.56	46,550	116,300
Fourteenth	12	5		28	18		14	9		3	14		57	.79	46	.64	165,800	133,800
Fifteenth	0	16		8	20		5	14		4	22		17	.24	72	1.00	49,500	209,500
Sixteenth	0	7		4	33		3	9		6	16		13	.18	65	.90	37,800	189,300
Seventeenth	4	11	9.67	4	20	11.21	3	10	11.25	0	12	11.40	11	.15	53	.74	32,000	154,200
Eighteenth	5	7		16	28		4	7		4	7		29	.40	49	.68	84,400	142,600
Western T. Sta.	1	14		4	25		3	7		1	11		9	.13	57	.79	26,180	165,800
Twentieth	4	16		10	21		2	12		4	15		20	.28	64	.89	58,200	186,200
Lawton	1	13		4	9		7	6		0	5		12	.17	33	.46	34,920	95,980
Maybury	3	7		2	15		0	10		3	10		8	.11	42	.58	23,270	122,300
Beecher	1	10		3	5		2	8		0	4		6	.08	27	.38	17,450	78,520
Williams	1	8		3	7		3	3		1	11		8	.11	29	.40	23,270	84,350
Tillman	1	10		7	18		3	7		3	8		14	.19	43	.60	40,730	125,017
Twenty-third	0	4		2	20		1	9		2	21		5	.07	54	.75	14,540	157,200

MICHIGAN LINE—WESTBOUND—Continued—BOTH DIVISIONS

Twenty-fourth	0	7		2	23		1	10		1	12		4	.06	52	.72	11,630	151,200
Twenty-fifth	2	1		5	10		1	18		0	13		8	.11	42	.58	23,270	122,200
Roosevelt	1	5		2	14		3	9		1	8		7	.10	36	.50	20,360	104,700
West. Gr. Blvd.	2	21		16	34		1	11		1	15		20	.28	81	1.12	58,170	235,600
Vinewood	3	8		5	26		0	18		2	12		10	.14	64	.89	29,090	186,200
Hubbard T. Sta.	0	5		1	10		0	4		1	8		2	.03	27	.38	5,818	78,550
Trolley Station	0	0		0	5		1	2		1	3		2	.03	10	.14	5,818	29,100
Scotten & Bang.	1	14		10	25		0	14		0	10		11	.15	63	.87	31,990	183,200
Lovett	0	6		1	25		0	16		0	12		1	.01	59	.82	2,909	171,600
Twenty-eighth	0	3		1	21		0	21		2	9		3	.04	54	.75	8,722	157,100
Twenty-ninth	2	5		4	15		0	21		1	10		7	.10	51	.71	20,360	148,300
Thirtieth	4	9		1	30		1	23		3	14		9	.12	76	1.05	26,180	221,100
Thirty-first	0	10		1	29		0	26		3	20		4	.06	85	1.18	11,630	247,300
Thirty-second	1	7		3	30		0	15		0	4		4	.06	56	.78	11,630	162,900
Thirty-third	5	6		3	22		0	11		1	6		9	.12	45	.62	26,180	130,800
Thirty-fourth	8	19		22	73		2	27		16	41		48	.67	160	2.22	134,200	465,400
Thirty-fifth	9	5		8	21		2	10		8	8		27	.38	44	.61	78,550	128,000
Campbell	0	1		0	14		0	22		0	9		0	0	46	.64	0	133,800
Bushey	1	3		2	6		0	10		1	1		4	.06	20	.28	11,630	58,180
Wesson	1	9		0	29		0	9		0	10		1	.01	57	.79	2,910	165,800
Military	1	20		1	27		8	42		8	24		18	.25	113	1.57	52,360	328,700
Livernois	9	21	11.89	21	92	11.25	3	43	11.75	13	48	10.53	46	.64	204	2.84	133,800	593,500

MICHIGAN LINE—WESTBOUND—Continued—GRATIOT DIVISION

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Gilbert	2	4		6	4		0	0		5	1		13	.28	9	.19	37,820	26,180
Cicotte	0	2		7	4		0	0		1	14		8	.17	20	.43	23,270	58,180
Markey	0	7		2	6		0	3		0	6		2	.04	22	.47	5,817	64,000
Clippert	1	0		2	7		1	3		0	8		4	.08	18	.38	11,630	52,360
Trolley Station	0	3		0	3		0	2		0	11		0	0	19	.40	0	55,250
Martin	0	5		1	6		0	0		0	9		1	.02	20	.47	2,909	58,200
Apple	0	1		0	6		0	0		0	2		0	0	9	.21	0	26,200
Larkins	0	1		0	5		0	2		1	6		1	.02	14	.33	2,909	40,720
Parkinsons	0	2		0	8		0	3		2	7		2	.05	20	.47	5,823	58,200
Ewers	0	3		0	13		0	3		0	6		0	0	25	.58	0	72,700
Freer	0	5		1	19		0	2		0	1		1	.02	27	.63	2,909	78,600
Central	0	3		0	21		0	4		0	2		0	0	30	.70	0	87,300
Trolley Station	0	4		0	10		0	1		0	2		0	0	17	.40	0	49,500
Lumley	0	1		1	8		0	0		0	19		1	.02	28	.65	2,909	81,500
McDonald	0	0		0	4		0	0		1	1		1	.02	5	.12	2,909	14,550
Lonyo	0	0		0	3		0	2		0	13		0	0	18	.42	0	52,400
Trolley Station	0	0		0	5		0	0		0	0		0	0	5	.12	0	14,550
Tecumseh	0	0		0	15		0	3		0	3		0	0	21	.49	0	61,100
Carlton	0	0		0	14		0	0		0	3		0	0	17	.40	0	49,500
Addison	0	57	8.83	0	86	10.00	0	10	9.00	0	25	9.91	0	0	178	4.14	0	517,833
Total Grat. Time			61.00			62.04			59.75			60.28						
Totals													7,344		7,344		21,370,000	21,370,000

MICHIGAN LINE—WESTBOUND

Traffic count for congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	2,657	0		3,031	0		907	0		6,595	38.34	0	0
Broadway	102	230		154	432		123	79		379	2.2	741	4.31
Monroe	34	81		35	102		77	21		146	.85	204	1.19
Library	6	29		37	80		39	17		82	.47	126	.73
Farmer	4	100		154	322		140	40		298	1.73	462	2.68
Woodward	240	1,051		564	790		498	149		1,302	7.57	1,990	11.57
Griswold	430	352		882	656		538	100		1,850	13.08	1,108	6.44
Shelby	43	53		181	90		102	14		326	1.89	157	.91
Wayne	13	42		93	88		43	6		149	.86	136	.79
Cass	41	101		110	64		105	17		256	1.49	182	1.06
Abbott	22	16	5.7	31	15	6.5	15	4	7.0	68	.39	35	.20
Final	0	1,537		0	2,633		0	2,140		0	0	6,310	36.69

Summary of both traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	142	188	105	153	588
Number of cars observed	65	115	43	21	244
Per cent. of scheduled cars observed	45.7	61.1	40.9	13.7	41.6

MICHIGAN LINE—EASTBOUND—GRATIOT DIVISION

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			Total				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Addison	27	0		75	0		31	0		46	0		179	4.17	0	0	492,800	0
Carlton	10	0		22	0		0	0		16	0		48	1.12	0	0	132,100	0
Tecumseh	6	0		6	0		2	0		5	0		19	.44	0	0	52,300	0
Lonyo	4	0		1	0		2	0		0	0		7	.16	0	0	19,301	0
Trolley Sta.	1	0		9	0		1	0		5	0		16	.37	0	0	44,050	0
McDonald	4	0		3	0		2	0		8	0		17	.40	0	0	46,800	0
Lumley	3	0		6	0		8	0		7	2		24	.56	2	.05	66,180	5,506
Trolley Station	8	0		4	1		6	0		1	0		19	.44	1	.02	52,400	2,753
Central	22	0		14	0		7	0		10	2		53	1.23	2	.05	145,800	5,506
Freer	9	0		9	0		4	0		2	0		24	.56	0	0	66,115	0
Ewers	7	0		9	0		1	0		4	2		21	.49	2	.05	57,815	5,506
Parkinson	3	0		3	1		1	0		0	0		7	.16	1	.02	19,275	2,753
Apple	4	0	8.0	3	2	6.0	3	0	7.1	1	0	5.1	11	.26	2	.05	30,280	5,506
Martin	3	0		15	1		5	1		3	1		26	.61	3	.07	71,560	8,259
Trolley Station	0	0		2	0		2	0		3	2		7	.16	2	.05	19,275	5,506
Clippert	0	0		2	0		2	0		6	0		10	.23	0	0	27,530	0
Markey	2	0		4	0		0	0		2	2		8	.19	2	.05	22,020	5,506
Cicotte	2	0		40	3		0	4		4	1		46	1.07	8	.19	126,700	22,020
Gilbert	0	1		1	7		3	2		0	7		4	.09	17	.39	11,010	46,800

MICHIGAN LINE—EASTBOUND—Continued—BOTH DIVISIONS

Livernois	101	27	3.5	66	16	2.5	20	8	2.6	112	14	4.4	299	3.88	65	.84	822,900	178,900
Military	2	0		41	7		3	3		13	3		59	.77	13	.17	162,500	35,800
Wesson	37	0		24	2		2	0		19	2		82	1.06	4	.05	225,800	11,010
Bushey	15	1		6	1		10	1		9	0		40	.52	3	.04	110,100	8,259
Campbell	23	0		3	1		8	0		10	3		44	.57	4	.05	121,200	11,010
Greusel	21	0		13	1		11	1		7	3		52	.66	5	.07	143,400	13,960
Junction	53	3		49	19		4	5		41	24		147	1.91	51	.66	404,630	140,300
Thirty-third	40	1		19	1		0	1		5	9		64	.83	12	.16	176,300	33,040
Thirty-second	13	0		11	4		0	0		6	1		30	.39	5	.05	82,600	13,760
Lockwood	31	1		39	2		4	1		18	4		92	1.19	8	.10	253,200	22,020
Goldner	34	0		15	0		0	0		15	0		64	.83	4	.05	116,300	11,010
Twenty-ninth	25	0		21	2		4	0		7	7		57	.74	9	.12	156,900	24,790
Twenty-eighth	35	0		30	4		2	3		22	5		89	1.15	12	.16	245,000	33,040
Clark	19	1		9	1		2	2		9	4		39	.51	8	.10	107,500	22,020
Scotten	30	2		15	3		0	0		18	4		63	.82	9	.12	174,500	24,790
Trolley Station	1	0		0	0		0	0		2	1		3	.04	1	.01	8,260	2,753
Hubbard	20	1	9.4	11	1	9.0	2	1	9.4	7	2	9.6	40	.52	5	.07	110,100	13,760
Vinewood	26	1		18	3		1	0		18	3		63	.82	7	.09	174,500	19,275
W. Gr. Blvd	8	1		30	6		0	3		28	6		66	.86	16	.21	181,700	44,050
Roosevelt	26	1		9	3		3	1		17	2		55	.71	7	.09	151,400	19,275
Twenty-fifth	13	1		20	3		5	3		14	5		52	.68	12	.16	143,100	33,040
Twenty-fourth	12	1		13	3		1	4		24	4		50	.65	12	.16	137,600	33,040
Twenty-third	14	1		21	4		0	0		14	5		49	.64	10	.13	135,000	27,530
Isabella	3	4		16	12		1	1		14	5		34	.44	22	.29	93,600	60,590
Williams	1	1		10	2		0	3		2	3		13	.17	9	.12	35,800	24,790
Beecher	7	2		20	3		2	0		10	4		39	.51	9	.12	107,300	24,790
Maybury	5	0		8	0		2	2		10	4		25	.32	2	.03	68,830	5,506
Lawton	4	2		7	0		2	3		9	3		22	.29	8	.10	60,580	22,020
Twentieth	12	4		29	7		2	2		20	5		63	.82	18	.23	173,400	49,550
Western Market	5	4		23	17		8	0		6	1		42	.55	22	.29	115,600	60,590
Eighteenth	6	4		34	4		1	4		11	2		52	.68	14	.18	143,100	38,550
Seventeenth	10	3	6.2	20	3	5.6	3	0	5.1	21	2	5.5	54	.70	8	.10	148,700	22,020
Sixteenth	16	8		29	2		8	0		21	7		74	.96	17	.22	203,800	47,000
Fifteenth	5	4		16	2		11	0		29	6		61	.79	12	.16	167,900	33,140
Fourteenth	16	9		28	9		7	8		25	7		76	.99	33	.43	209,100	90,990

MICHIGAN LINE—EASTBOUND—Continued—BOTH DIVISIONS

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Wabash	6	3		22	1		2	1		19	4		49	.64	9	.12	124,800	24,990
Vermont	4	7		16	8		3	1		16	1		39	.51	17	.22	107,300	46,900
Twelfth	11	3		36	3		3	2		18	7		68	.88	15	.19	187,200	41,800
Eleventh	7	4		21	3		0	1		14	2		42	.55	10	.13	115,600	27,530
National	1	8		5	3		2	0		7	0		15	.19	11	.14	41,300	30,280
Tenth	0	2		4	4		0	0		1	1		5	.07	7	.09	13,765	19,275
Trumbull	11	16		22	16		3	7		20	30		56	.73	69	.90	154,100	189,900
Eighth	1	16		20	4		1	2		19	4		41	.53	26	.34	112,800	71,525
Brooklyn	14	19		26	6		3	0		10	3		53	.69	28	.36	145,800	77,100
Sixth	9	26		15	8		1	1		7	6		32	.42	41	.53	88,100	112,800
Fifth	7	4		20	6		0	3		18	4		45	.58	17	.22	123,800	46,800
Fourth	9	6		17	8		3	1		10	3		39	.51	18	.23	107,300	49,500
Third	9	33		24	15		10	1		19	14		62	.81	63	.82	170,600	173,400
Porter	5	13		27	20		3	5		15	15		50	.65	53	.69	137,600	145,800
First	4	11		19	5		6	4		8	10		37	.48	30	.39	101,800	82,600
Abbott	6	25		36	30		13	7		27	25		82	1.07	87	1.13	225,659	239,359
Cass & Park	4	14		19	56		6	9		8	5		37	.48	84	1.09	101,800	231,200
Wayne	0	33		18	31		21	4		17	32		56	.73	100	1.30	154,200	275,300
Shelby	10	41		70	87		33	11		74	29		187	2.43	168	2.18	514,800	462,400
Griswold	51	136		150	196		48	11		145	116		394	5.12	459	5.96	1,084,100	1,261,000
Woodward	35	126	10.8	318	229	11.7	78	37	12.9	207	169	11.2	638	8.28	561	7.29	1,756,500	1,542,900
Monroe-Mich	15	34		53	37		23	6		69	39		160	2.08	116	1.51	440,400	319,200
Opera House	6	21		65	27		18	3		43	31		132	1.72	82	1.06	363,400	225,600
Farmer	9	28		92	58		44	5		51	25		196	2.53	116	1.51	539,500	319,200
Library	4	5		30	15		14	3		19	8		67	.87	31	.40	184,500	85,350
Randolph	3	25		19	9		14	2		15	14		51	.66	50	.65	140,400	137,600
Macomb	12	13		94	34		34	4		91	26		231	3.00	77	1.00	635,800	219,800
Gratiot	10	13		48	21		21	3		32	5		111	1.44	42	.55	305,600	115,600
Brush	19	4		44	18		13	1		39	8		115	1.50	31	.40	316,600	85,350
Beaubien	4	4		15	8		12	0		12	6		43	.56	18	.23	118,400	49,550

MICHIGAN LINE—EASTBOUND—Continued—BOTH DIVISIONS

Raynor	0	6		7	13		2	2		4	10		13	.17	31	.40	35,800	85,350
Antoine	2	5		14	25		11	6		21	24		48	.62	60	.78	132,100	165,200
Trolley Station	0	1		5	11		0	0		7	10		12	.16	22	.29	33,040	60,580
Hastings	4	10		24	29		13	5		31	25		72	.94	69	.90	198,200	189,900
Maple	0	3		11	7		1	6		2	7		14	.18	23	.30	38,540	63,300
Trolley Station	0	0		1	2		0	2		0	0		1	.01	4	.05	2,753	11,010
Rivard	5	4		14	19		8	4		11	16		38	.49	43	.56	104,700	118,300
Russell	8	25		18	24		3	3		19	11		48	.62	63	.82	132,200	173,400
Riopelle	8	6		30	27		9	8		14	17		61	.79	58	.75	167,900	159,700
Orleans	8	6		20	21		3	9		16	14		47	.61	50	.65	129,500	137,600
Trolley Station	2	6		19	9		4	6		20	9		45	.59	30	.39	123,900	82,580
Trolley Station	1	0		3	2		1	3		1	2		6	.08	7	.09	16,510	19,265
Adelaide	5	3		5	8		5	4		0	1		15	.19	16	.21	41,280	44,050
St. Aubin	4	3	9.8	17	21	9.7	3	2	11.4	17	21	10.0	41	.53	47	.61	112,800	129,400
Dubois	2	1		10	19		5	9		4	9		21	.27	38	.49	57,800	104,600
Brewster	0	1		10	13		1	3		0	4		11	.14	21	.27	30,280	57,800
Chene	24	12		107	31		15	4		91	26		237	3.08	73	.95	652,310	202,000
Berlin	4	4		9	26		10	7		13	9		36	.46	46	.60	109,053	126,553
Jos. Campau	1	4		14	16		1	4		10	10		26	.34	34	.44	71,570	93,590
Mitchell	0	2		11	5		3	4		7	7		21	.27	18	.24	57,850	49,550
McDougall	3	2		7	7		0	5		7	13		17	.22	27	.35	46,790	74,300
Ludden	6	1		49	21		4	4		27	11		86	1.12	37	.48	236,800	101,800

MICHIGAN LINE—EASTBOUND—Continued—GRATIOT DIVISION

Streets	First Period			Second Period			Third Period			Fourth Period			Total				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Mack	2	2		17	8		2	8		24	13		45	1.05	31	.72	123,900	85,300
Elmwood	5	10	5.5	6	11	5.1	7	0	5.6	18	9	4.6	36	.84	30	.70	99,090	82,580
Pulford	0	6		0	7		0	5		5	10		5	.12	28	.65	13,762	77,070
Ellery	1	1		1	14		2	8		3	9		7	.16	32	.75	19,265	88,050
Sylvester	0	2		1	5		0	3		0	1		1	.02	11	.26	2,753	30,280
Fink Trol. S	0	9		5	3		1	2		0	13		6	.14	27	.63	16,510	74,300
Superior	0	0		0	2		0	0		0	1		0	0	3	.07	0	8,258
Mt. Elliott	28	21		145	64		55	25		158	104		386	8.98	214	4.98	1,062,700	589,000
Meldrum	0	3		4	26		0	7		0	4		4	.09	40	.93	11,060	110,100
Beaufait	0	7		2	11		2	7		4	13		8	.19	38	.88	22,065	104,600
Bellevue	0	8	5.0	0	24	4.4	1	3	6.0	1	14	3.9	2	.05	49	1.14	5,505	134,900
Concord	0	2		1	16		0	10		4	19		5	.12	47	1.09	13,760	129,300
Canton	0	4		1	16		0	10		0	18		1	.02	48	1.12	2,753	132,100
Helen	0	3		1	16		0	6		2	32		3	.07	57	1.32	8,259	156,900
E. Gr. Blvd. E. S.	0	5		0	24		6	12		1	30		7	.16	71	1.65	19,270	195,440
E. Gr. Blvd. W.S.	0	3		0	1		0	1		0	6		0	0	11	.26	0	30,280
Field	0	2		1	26		0	14		0	27		1	.02	69	1.61	2,753	189,900
Sheridan	0	4		2	41		1	19		1	39		4	.09	103	2.40	11,015	283,300
Townsend	0	4		3	23		0	7		0	26		3	.07	60	1.40	8,259	165,200
Baldwin	0	23		0	23		0	9		2	50		2	.05	105	2.44	5,505	288,800
Seyburn	1	0		0	11		0	12		0	3		1	.02	26	.61	2,753	71,580
Van Dyke	0	14		0	58		0	28		5	43		5	.12	143	3.33	13,760	393,500
Parker	0	5		1	17		0	11		0	12		1	.02	45	1.05	2,753	123,800
Maxwell	0	4	3.8	0	18	4.96	1	12	5.5	0	12	4.3	1	.02	46	1.07	2,753	126,600
Stephens	0	2		1	18		0	5		0	29		1	.02	54	1.25	2,753	148,700
Chippewa	0	5		2	22		0	7		0	45		2	.05	79	1.84	5,505	217,400
Seneca	0	2		0	19		0	12		0	17		0	0	50	1.16	0	137,600
Newland	0	3		4	8		0	4		0	12		4	.09	27	.63	11,015	74,310
Fischer	1	5		0	31		0	12		0	31		1	.02	79	1.84	2,753	217,400
Crane	0	2		0	26		0	18		0	31		0	0	77	1.79	0	212,000
Rohns Trol. S	0	5		0	28		0	18		0	32		0	0	83	1.93	0	228,515
Holcomb	0	2		0	24		0	10		0	15		0	0	51	1.19	0	140,300
Belvidere	0	16		0	47		0	27		0	22		0	0	102	2.37	0	280,700
McClellan	0	5		0	31		0	27		0	45		0	0	108	2.51	0	297,253
May	0	3		0	15		0	3		0	13		0	0	34	.79	0	93,600
Cooper	0	5		0	14		0	5		0	29		0	0	53	1.23	0	145,800
Harper	0	17	4.6	0	94	4.9	0	25	6.0	0	35	5.3	0	0	171	3.98	0	470,650
Total Grat. Time			65.6			63.86			71.6			63.9						

MICHIGAN LINE—EASTBOUND—Continued—MACK DIVISION

Gratiot	0	0		10	2		0	0		6	0		16	.47	2	.06	44,045	5,506
Elmwood	5	0		1	5		0	1		8	1		14	.41	7	.21	38,650	19,272
Trolley Station	0	0		2	5		0	0		0	2		2	.06	7	.21	5,502	19,272
Ellery	0	1		10	5		11	2		4	20		25	.74	28	.82	68,900	77,080
Trolley Station	0	0		0	3		7	0		0	0		7	.21	3	.09	19,272	8,258
Mt. Elliott	37	13		107	25		69	4		81	27		294	8.65	69	2.03	809,600	189,900
Meldrum	3	5		6	10		0	4		0	5		9	.26	24	.71	24,780	66,070
Beaufait	0	3		3	9		0	1		1	4		4	.12	17	.50	11,010	46,790
Bellevue	0	11		1	10		2	1		0	5		3	.09	27	.79	8,258	74,320
Concord	1	5		1	18		1	6		1	5		4	.12	34	1.00	11,010	93,550
Canton	0	2		2	16		3	1		1	17		6	.18	36	1.06	16,515	99,090
Helen	0	2	3.3	0	12	4.09	0	2	5.0	2	14	3.6	2	.06	30	.88	5,502	82,590
E. Gr. Blvd.	0	18		2	22		0	3		2	29		4	.12	72	2.12	11,010	198,180
Field	0	2		27	16		0	4		2	14		29	.85	36	1.06	79,900	99,090
Sheridan	1	2		0	23		0	3		4	15		5	.15	43	1.27	13,762	118,350
Townsend	0	8		4	35		0	6		1	30		5	.15	79	2.32	13,762	217,400
Baldwin	1	2		2	20		1	5		2	33		6	.18	60	1.76	16,515	165,150
Beals	0	10		3	28		0	4		2	18		5	.15	60	1.76	13,762	165,150
Van Dyke	1	2		1	26		2	11		1	25		5	.15	64	1.88	13,762	176,150
Parker	0	3		0	14		0	2		0	5		0	0	24	.71	0	66,070
Maxwell	0	2		0	16		0	6		1	7		1	.03	31	.91	2,753	85,320
Stephens	0	0		1	7		1	2		0	1		2	.06	10	.29	5,502	27,530
Chippewa	0	1		1	7		0	3		0	6		1	.03	17	.50	2,753	46,790
Seneca	1	0		0	13		0	2		0	2		1	.03	17	.50	2,753	46,790
Newland	0	0	3.5	2	7	4.91	0	4	5.5	0	3	5.2	2	.06	14	.41	5,506	38,540
Fischer	0	7		0	16		0	4		0	14		0	0	41	1.21	0	112,800
Crane	0	14		1	33		0	8		0	18		1	.03	73	2.15	2,753	200,990
Rohns	0	5		1	16		0	5		0	12		1	.03	38	1.12	2,753	104,600
Holcomb	0	0		1	21		0	11		2	5		3	.09	37	1.09	8,258	101,810
Belvidere	0	6		0	19		0	13		0	17		0	0	55	1.62	0	151,400

MICHIGAN LINE—EASTBOUND—Continued—MACK DIVISION

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
McClellan	0	2		2	49		0	13		1	18		3	.09	82	2.41	8,258	225,750
Trolley Station	0	2		0	11		0	0		0	0		0	0	13	.38	0	35,780
Pennsylvania	1	2		6	30		0	11		0	13		7	.21	56	1.65	19,272	154,180
Cadillac	0	2		2	21		0	12		0	18		2	.06	53	1.56	5,506	145,750
Hurlbut	0	2		2	16		0	8		0	10		2	.06	36	1.06	5,506	99,100
Bewick	0	6		0	15		0	5		0	18		0	0	44	1.29	0	121,100
Garland	0	4		0	14		0	2		0	3		0	0	23	.68	0	63,300
St. Clair	0	0	4.0	0	60	5.63	0	6	7.0	0	14	4.6	0	0	80	2.38	0	220,100
Hamilton	0	2		0	18		0	4		0	12		0	0	36	1.06	0	99,100
Kirwin	0	2		0	10		0	3		0	8		0	0	23	.68	0	63,300
Montclair	0	1		0	13		0	5		0	17		0	0	36	1.06	0	99,100
Lemay	0	3		0	6		0	8		0	6		0	0	23	.68	0	63,300
Fairview	0	3		0	6		0	3		0	9		0	0	21	.62	0	57,800
Lillibridge	0	1		0	12		0	5		0	9		0	0	27	.79	0	74,330
Beniteau	0	4		0	5		0	6		0	3		0	0	18	.53	0	49,540
St. Jean	0	4		0	7		0	4		0	2		0	0	17	.50	0	46,790
Gladwin	0	4		0	9		0	4		0	2		0	0	19	.56	0	52,290
Hilger	0	1		0	11		0	2		0	0		0	0	14	.41	0	38,530
Lycaste	0	0		0	12		0	5		0	5		0	0	22	.65	0	60,580
Hart	0	6		0	5		0	0		0	0		0	0	11	.32	0	30,280
Total Mack Time			10.8			14.63			17.5			13.4						
Totals													7,762		7,762		21,370,000	21,370,000

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MICHIGAN LINE—EASTBOUND—Continued

Traffic count for congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per ca
Initial	2,320	0		2,164	0		1,044	0		5,528	33.10	0	0
Abbott	46	59		82	23		102	35		230	1.38	117	.70
Cass	9	89		38	35		54	11		101	.61	135	.81
Wayne	7	59		30	73		89	29		126	.75	161	.96
Shelby	32	143		156	166		323	37		511	3.06	346	2.07
Griswold	197	564		417	445		369	128		983	5.89	1,137	6.81
Woodward	310	649		1,105	708		738	153		2,153	12.88	1,510	9.05
Farmer	29	92		275	157		178	44		482	2.89	293	1.75
Library	7	55		52	27		37	5		96	.57	87	.52
Monroe	11	77		46	30		56	10		113	.63	117	.70
Broadway	39	62	7.03	204	95	6.15	137	11	9.0	380	2.27	168	1.01
Final	0	1,157		0	2,812		0	2,663		0	0	6,632	39.73

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Summary of both traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	123	191	111	142	567
Number of cars observed	60	116	41	27	244
Per cent. of scheduled cars observed	48.8	60.7	36.9	19.0	43.0

MYRTLE LINE—WESTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Field	0	0		15	0		28	0		33	0		76	1.38	0	0	86,000	0
East Grand Blv.	43	0		70	0		43	0		42	0		198	3.60	0	0	224,200	0
Helen	4	0		14	0		8	0		11	0		37	.67	0	0	41,880	0
Canton	7	1		3	0		17	1		13	0		40	.73	2	.04	45,200	2,260
Concord	7	1		13	0		21	0		11	0		52	.95	1	.02	58,820	1,132
Bellevue	6	0		22	0		32	0		46	0		106	1.93	0	0	120,000	0
Beaufait	0	0		11	0		11	0		4	1		26	.47	1	.02	29,450	1,132
Meldrum & Iron Trolley Sta.	0	1		10	2		8	0		4	0		22	.40	3	.05	24,950	3,395
Mt. Elliott-Jeff.	9	2	3.57	43	1	3.39	32	1	3.86	27	0	3.64	111	2.02	4	.07	125,650	4,525
Larned	2	0		5	0		0	0		0	0		7	.13	0	0	7,920	0
Congress	5	0		7	0		0	0		1	0		13	.24	0	0	14,710	0
Fort-Mt. Elliott	9	0		15	1		7	1		6	4		37	.67	6	.11	41,900	6,790
Leib	15	0		29	1		15	3		8	0		67	1.24	4	.07	75,900	4,525
Trolley Sta.	6	0		15	1		0	1		0	1		21	.38	3	.05	23,770	3,395
Elmwood	23	1		31	1		18	3		19	1		91	1.65	6	.11	103,000	6,790
McDougall	10	0		35	0		24	0		12	1		81	1.47	1	.02	91,700	1,132
Jos. Campau	18	0		32	2		16	4		23	0		89	1.64	6	.11	100,750	6,790
Trolley Sta.	2	0		10	1		1	3		1	2		14	.25	6	.11	15,850	6,790
Chene	23	7		48	10		19	9		24	12		114	2.07	38	.69	129,000	43,000
Dubois	9	0		28	0		5	3		8	5		50	.91	8	.14	56,650	9,050
St. Aubin	11	2		24	2		8	9		10	4		53	.96	17	.31	60,100	19,200
Dequindre	15	0	6.50	11	4	6.26	7	1	6.12	12	3	5.82	45	.82	8	.14	50,950	9,050
Orleans	7	4		26	4		6	15		1	11		40	.73	34	.62	45,200	38,480
Riopelle	11	0		15	4		6	5		4	6		36	.65	15	.27	40,700	16,980
Russell	11	4		18	2		4	14		11	4		44	.80	24	.44	49,800	27,260
Rivard	8	1		29	13		11	8		3	4		51	.93	26	.47	57,750	29,320
Hastings	10	4		10	2		7	3		7	7		34	.62	16	.29	38,500	18,200
Antoine	1	1		5	13		11	6		4	2		21	.38	22	.40	23,800	24,900
Beaubien	1	4		4	4		6	1		2	2		13	.24	11	.20	14,710	12,400

MYRTLE LINE—WESTBOUND—Continued

Gratiot-Fort	0	20		3	35		14	11		0	11		17	.31	77	1.40	19,250	87,100
Congress-Brush	0	4		11	14		4	3		4	11		19	.35	32	.58	21,500	36,200
Randolph	0	11		2	24		1	11		3	20		6	.11	66	1.20	6,790	74,750
Trolley Sta.	0	2		0	0		0	6		1	1		1	.02	9	.16	1,132	10,180
Bates	2	12		4	43		23	34		8	18		37	.67	107	1.95	41,800	121,100
Woodward	6	75	7.17	24	112	6.74	23	57	6.75	17	70	6.18	70	1.27	314	5.71	79,226	355,500
Griswold-Cong.	2	17		17	44		17	10		9	4		45	.82	75	1.36	50,900	84,818
Fort	9	15		47	38		42	9		25	9		123	2.24	71	1.29	139,300	80,350
Michigan	16	25		69	75		66	33		60	57		211	3.84	190	3.45	239,000	215,100
State	30	10		136	52		86	10		67	13		319	5.80	85	1.54	361,050	96,200
Grand Riv-Gris.	3	8	4.43	49	35	4.48	28	8	5.87	38	7	4.35	118	2.14	58	1.05	133,600	65,650
Wash. Blvd	1	2		15	9		17	0		7	5		40	.73	16	.29	45,260	18,100
Park Place	0	1		12	7		12	3		12	1		36	.65	12	.22	40,750	13,575
Bagley	0	9		9	10		2	1		3	1		14	.25	21	.38	15,850	23,770
Cass & Middle	1	4		9	3		8	6		7	4		25	.45	17	.31	28,200	19,250
Adams	0	2		1	2		2	2		3	3		6	.11	9	.16	6,790	10,180
Elizabeth, 1st and Orchard	1	3		2	3		13	3		4	1		20	.36	10	.18	22,620	11,320
Plum, Gilman & 2d	0	9		3	8		3	2		6	5		12	.22	24	.44	13,575	27,160
Cherry	0	5		3	5		1	3		3	4		7	.13	17	.31	7,920	19,250
High and 3d	0	6		11	8		1	3		6	5		18	.33	22	.40	20,350	24,900
Henry, Locust, 3d and 4th	2	4		10	12		6	14		6	6		24	.44	36	.65	27,160	40,750
4th and Pine	1	16		0	7		7	3		5	5		13	.24	31	.56	14,710	35,150
5th	0	2		0	9		4	5		2	3		6	.11	19	.35	6,790	21,500
Greenwood and Perry	1	3	5.43	3	5	5.30	8	9	6.62	4	6	5.13	16	.29	23	.42	18,100	26,000
Bagg	0	0		4	3		2	8		7	7		13	.24	18	.33	14,710	20,380
6th	0	1		2	8		0	4		0	5		2	.04	18	.33	2,260	20,380
Hobson & Allen	1	1		1	5		1	8		2	4		5	.09	18	.33	5,655	20,380
Brooklyn	0	0		2	7		1	6		0	7		3	.05	20	.36	3,395	22,620
Gibson and Ash	0	1		0	3		2	6		0	9		2	.04	19	.35	2,260	21,500
Lincoln and Sycamore	1	0		1	4		0	1		1	3		3	.05	8	.15	3,395	9,050
Myrtle-Gd. River	10	3	2.57	21	17	2.78	12	14	2.50	12	11	2.81	55	1.00	45	.82	62,200	50,950
Trumbull	0	0		15	9		18	13		15	11		48	.87	33	.60	54,350	37,350

MYRTLE LINE—WESTBOUND— Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
National	0	0		2	9		0	5		1	9		3	.05	23	.42	3,391	26,000
Harrison	0	0		1	12		0	12		0	19		1	.02	43	.78	1,132	48,700
12th	3	4		2	18		0	18		0	16		5	.09	56	1.02	5,655	63,400
Vermont	0	0		0	11		0	8		2	9		2	.04	28	.51	2,260	31,700
Wabash	0	1		2	15		0	17		1	13		3	.05	46	.84	3,395	52,050
14th	7	3		20	8		23	9		14	17		64	1.16	37	.67	72,400	41,880
15th	0	4		0	12		2	13		1	9		3	.05	38	.69	3,395	43,000
16th	0	1		1	13		0	18		1	13		2	.04	45	.82	2,260	50,950
17th	0	2		0	12		0	20		0	20		0	0	54	.98	0	61,100
18th	0	1	5.00	3	35	5.91	0	38	7.00	0	27	5.41	3	.05	101	1.83	3,395	114,457
Humboldt	0	3		1	23		0	18		3	22		4	.07	66	1.20	4,525	74,650
Lawton	1	5		0	31		0	33		0	21		1	.02	90	1.63	1,132	101,900
Maybury	0	1		0	44		0	29		0	24		0	0	98	1.76	0	111,000
Williams	0	2		0	24		0	23		0	13		0	.0	62	1.13	0	70,204
Tillman	0	11		0	23		0	18		1	13		1	.02	65	1.18	1,132	73,550
23d	0	1		0	17		0	22		0	15		0	0	55	1.00	0	62,200
24th	0	2		0	30		0	27		0	14		0	0	73	1.33	0	82,600
25th	0	1		0	13		0	20		0	7		0	0	41	.74	0	46,400
Roosevelt	0	25	4.29	0	82	5.23	0	75	4.75	0	30	4.65	0	0	212	3.85	0	240,000
Totals			38.96			40.09			43.47			37.99	3,015		3,015		3,412,900	3,412,900

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MYRTLE LINE—WESTBOUND

Traffic count for congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	457	0		759	0		356	0		1,572	27.57	0	0
Brush	2	11		11	13		4	9		17	.31	33	.57
Randolph	1	14		1	30		6	22		8	.14	66	1.15
Bates	3	34		10	54		23	26		36	.63	114	2.0
Woodward	3	130		26	163		30	53		59	1.03	346	6.07
Griswold	4	45		18	79		34	21		56	.98	145	2.54
Fort	15	31		72	52		39	10		126	2.21	93	1.63
Lafayette	29	38		126	108		75	30		230	4.03	176	3.08
State	47	25		186	81		85	15		318	5.57	121	2.12
Gr. River	4	16		66	26		31	12		101	1.77	54	.94
Washington	1	4		15	12		17	1		33	.57	17	.31
Park Place	1	5		16	4		7	0		24	.42	9	.15
Bagley	1	4		8	6		6	2		15	.26	12	.21
Cass	1	3	8.15	18	12	8.36	11	5	10.36	30	.52	20	.33
Final		209			692			518				1,419	24.87

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Summary of both traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	30	70	26	57	183
Number of cars observed	20	56	19	17	112
Per cent. of scheduled cars observed	66.6	80.0	73.0	29.8	61.2

MYRTLE LINE—EASTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Roosevelt	59	0		74	0		16	0		29	0		178	4.05	0	0	237,100	0
25th	14	0		22	0		9	0		2	0		47	1.07	0	0	62,600	0
24th	19	0		18	0		8	0		12	0		57	1.30	0	0	75,900	0
23d	22	0		10	0		5	0		10	0		47	1.07	0	0	62,600	0
Tillman	20	0		19	0		7	0		12	0		58	1.32	0	0	77,200	0
Williams	9	0		25	0		5	0		14	0		53	1.20	0	0	70,600	0
Maybury	36	0		32	0		5	0		24	0		97	2.20	0	0	129,349	0
Lawton	23	0		26	0		7	1		15	0		71	1.61	1	.02	94,600	1,332
Humboldt	20	1		12	0		0	0		17	1		49	1.11	2	.05	65,250	2,665
18th	21	0	4.29	25	3	3.46	9	1	4.28	18	0	3.65	73	1.66	4	.09	97,200	5,325
17th	7	2		17	1		2	1		22	1		48	1.09	5	.11	64,000	6,660
16th	6	0		10	0		1	1		9	0		26	.59	1	.02	34,625	1,332
15th	5	0		13	4		0	1		5	0		23	.52	5	.11	30,625	6,660
14th	20	16		18	25		11	3		13	17		62	1.41	61	1.39	82,600	81,252
Wabash	11	1		26	0		7	2		5	0		49	1.11	3	.07	65,250	4,000
Vermont	8	0		17	1		2	0		6	1		33	.75	2	.05	43,925	2,665
12th	11	2		36	4		4	0		17	2		68	1.55	8	.18	90,500	10,660
Harrison	4	0		16	0		1	3		5	1		26	.59	4	.09	34,625	5,325
National	2	9		8	2		0	0		3	3		13	.30	14	.32	17,320	18,650
Trumbull	1	12		5	15		0	11		2	15		8	.18	53	1.20	10,660	70,600
Myrtle-Gd. River	14	5	5.00	51	28	5.21	7	2	6.28	11	7	5.40	83	1.89	42	.95	110,700	55,950
Lincoln & Sycam.	2	3		10	0		4	1		1	0		17	.39	4	.09	22,650	5,325
Gibson and Ash.	5	2		12	3		5	1		6	1		28	.64	7	.16	37,300	9,320
Brooklyn	2	0		21	0		0	0		7	0		30	.68	0	0	39,980	0
Hobson and Elm	1	0		5	0		0	0		6	0		12	.27	0	0	16,000	0
Bagg	5	18		23	10		15	1		2	7		45	1.02	36	.82	59,950	47,950
Greenwood and Perry	0	3	3.14	11	8	4.00	3	0	3.14	4	3	3.75	18	.41	14	.32	23,980	18,650
5th	2	2		6	4		3	2		8	0		19	.43	8	.18	25,300	10,660
4th and Pine	4	3		11	0		17	0		6	2		38	.86	5	.11	50,600	6,660
Henry, Locust, 3d and 4th	10	2		12	10		3	4		8	2		33	.75	18	.41	43,950	23,980

MYRTLE LINE—EASTBOUND—Continued

High and 3d	2	6		26	4		10	1		8	3		46	1.05	14	.32	61,250	18,650
Cherry	2	0		5	2		2	1		3	2		12	.27	5	.11	16,000	6,660
Plum, Gilman & Second	2	1		7	3		7	0		2	0		18	.41	4	.09	23,980	5,325
Elizabeth, 1st & Orchard	1	10		8	3		2	1		3	1		14	.32	15	.34	18,650	20,000
Adams	0	2		2	8		6	0		2	1		10	.23	11	.25	13,320	14,650
Cass, Gd. River and Middle	3	8		11	11		15	0		4	1		33	.75	20	.45	43,950	26,630
Jones	0	4		1	0		1	0		1	4		3	.07	8	.18	4,000	10,660
Bagley	0	5		0	3		1	11		1	2		2	.05	21	.48	2,665	27,980
State, Cass and West Park	1	4		0	13		0	7		4	10		5	.11	34	.77	6,660	45,260
Park Place	0	3		5	5		0	0		1	0		6	.14	8	.18	7,990	10,660
Wash. Blvd.	1	3		4	18		7	15		2	6		14	.32	42	.95	18,650	55,920
Griswold & Shel.	4	18		21	29		14	12		9	19		48	1.09	78	1.77	63,950	103,950
Griswold State	7	54		28	88		24	8		16	26		75	1.70	176	4.00	99,900	234,311
Trolley Station	0	0		13	57		14	1		7	26		34	.77	84	1.91	45,260	111,950
Michigan	36	25		69	85		37	34		68	48		210	4.79	192	4.37	279,900	256,000
Fort	6	28		4	57		27	12		18	25		55	1.25	122	2.78	73,220	162,600
Griswold-Cong.	12	13		28	29		7	2		9	5		56	1.27	49	1.11	74,600	65,250
Woodward	22	12	9.29	86	28	10.04	45	3	9.00	46	22	8.82	199	4.53	65	1.47	265,100	86,500
Bates	5	4		39	23		21	3		18	12		83	1.88	42	.95	110,587	55,920
Trolley Station	1	2		0	1		0	0		1	1		2	.05	4	.09	2,665	5,325
Randolph	3	7		24	15		9	12		4	6		40	.91	40	.91	53,225	53,225
Brush	2	5		13	6		9	1		12	7		36	.82	19	.43	47,950	25,300
Beaubien	1	12		9	7		0	4		3	9		13	.30	32	.73	17,320	42,600
Antoine	2	24		9	19		5	5		4	6		20	.45	54	1.23	26,630	71,900
Hastings	3	14		3	14		2	3		2	11		10	.23	42	.95	13,320	55,920
Rivard	0	6		5	21		1	13		0	11		6	.14	51	1.16	7,990	67,920
Russell	1	0		40	17		0	2		2	4		43	.98	23	.52	57,300	30,620
Riopelle	1	2		2	15		0	13		1	8		4	.09	38	.86	5,325	50,600
Orleans	2	0		2	14		2	11		4	9		10	.23	34	.77	13,320	45,260
Dequindre	0	1	5.14	0	5	5.37	0	7	5.50	1	3	5.05	1	.02	16	.36	1,332	21,300

MYRTLE LINE—EASTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
St. Aubin	3	6		1	21		1	20		0	10		5	.11	57	1.30	6,660	75,950
Dubois	0	0		1	14		1	12		0	6		2	.05	32	.73	2,665	42,600
Chene	1	5		3	39		3	23		3	18		10	.23	85	1.93	13,320	113,350
Trolley Station	0	0		0	7		0	5		2	4		2	.05	16	.36	2,665	21,300
Jos. Campau	1	6		3	23		2	20		2	12		8	.18	61	1.39	10,660	81,300
McDougall	0	8		3	23		0	12		0	4		3	.07	47	1.07	4,000	62,600
Elmwood	1	1		2	29		2	17		2	22		7	.16	69	1.57	9,320	91,900
Trolley Station	0	0		0	15		0	5		1	8		1	.02	28	6.40	1,332	37,300
Leib	0	8		0	30		0	11		2	14		2	.05	63	1.43	2,665	83,948
Mt. Elliott-Cong.	1	4		0	8		0	11		2	11		3	.07	34	.77	4,000	45,260
Mt. Elliott-Jeff	0	4	5.56	2	12	5.42	0	6	5.50	0	12	5.11	2	.05	34	.77	2,665	45,260
Meldrum & Iron	0	9		0	11		0	9		0	5		0	0	34	.77	0	45,260
Trolley Station	0	0		0	0		0	2		0	2		0	0	4	.09	0	5,325
Beaufait	0	15		0	4		0	3		0	4		0	0	26	.59	0	34,620
Bellevue	0	38		0	25		0	9		0	15		0	0	87	1.98	0	115,900
Concord	0	2		0	18		0	12		0	5		0	0	37	.84	0	49,300
Canton	0	2		0	4		0	5		0	3		0	0	14	.32	0	18,650
Helen	0	4		0	10		0	5		0	3		0	0	22	.50	0	29,300
East Grand Blvd.	0	5		0	8		0	6		0	14		0	0	33	.75	0	43,950
Field	0	19	2.86	0	51	3.26	0	23	3.57	0	46	3.29	0	0	139	3.16	0	185,000
Totals			35.28			36.76			37.27			35.07	2,562		2,562		3,412,900	3,412,900

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MYRTLE LINE—EASTBOUND

Traffic count for congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Aver.	Off	Av. per car
Initial	635	0		707	0		188	0		1,530	26.4	0	0
Middle-Cass	19	16		23	16		7	2		49	.84	34	.59
Bagley	3	2		1	18		0	3		4	.07	23	.40
State	9	19		2	21		5	14		16	.28	54	.93
W. Park	0	3		8	11		0	5		8	.14	19	.33
Park Place	0	0		1	7		0	0		1	.02	7	.12
Washington	2	17		0	20		8	6		10	.17	43	.74
Shelby	31	47		29	43		18	9		78	1.34	99	1.71
Griswold	30	73		42	139		23	27		95	1.64	239	4.12
Michigan	82	65		133	111		62	34		277	4.78	210	3.62
Fort	41	79		57	96		47	15		145	2.50	190	3.28
Congress	7	30		34	43		13	5		54	.93	78	1.35
Woodward	59	33		120	36		73	11		252	4.35	80	1.38
Bates	7	18		67	18		34	2		108	1.86	38	.65
Randolph	1	16		34	19		24	2		59	1.02	37	.64
Brush	3	19		21	8		8	4		32	.55	31	.53
Final		492	6.82		673	8.20		371	8.44			1,536	26.50

Summary of both traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	33	70	26	55	184
Number of cars observed	22	58	16	17	113
Per cent. of scheduled cars observed	66.6	82.8	61.5	30.9	61.4

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SHERMAN LINE—WESTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Cadillac	98	0		193	0		140	0		87	0		518	5.89	0	0	933,220	0
Pennsylvania	16	0		42	1		19	0		19	0		96	1.09	1	.01	171,100	1,782
Park View	11	0		34	0		9	2		26	1		80	.91	3	.03	142,600	5,348
McClellan	31	0		53	1		14	1		35	0		133	1.51	2	.02	237,000	3,564
Belvidere	28	0		47	0		6	0		25	0		106	1.21	0	0	188,800	0
Holcomb	16	0		40	0		10	0		26	0		92	1.05	0	0	163,900	0
Hibbard	19	0		31	1		4	3		12	0		66	.75	4	.05	117,600	7,129
Crane	30	0		71	2		9	3		15	2		125	1.42	7	.08	222,800	12,470
Fischer	24	0		54	4		3	0		26	1		107	1.22	5	.06	190,700	8,912
Burns	4	4		19	1		10	0		10	0		43	.49	5	.06	76,640	8,912
Iroquois	4	2	4.46	7	0	4.62	9	2	4.12	7	0	4.12	27	.31	4	.05	48,110	7,129
Seminole	6	1		17	3		6	0		10	1		39	.44	5	.06	69,520	8,912
Parker	28	0		56	4		17	5		33	2		134	1.52	11	.12	238,700	19,600
Van Dyke	42	0		73	9		19	4		25	3		159	1.81	16	.18	283,400	28,520
ShipherdandSeyburn	33	1		65	6		20	6		44	0		162	1.84	13	.15	288,700	23,170
Baldwin	31	0		65	5		12	10		53	4		161	1.83	19	.22	286,900	33,860
Townsend	29	3		51	3		18	6		23	5		121	1.38	17	.19	215,600	30,300
Sheridan	16	1		65	3		9	2		38	6		128	1.46	12	.14	228,100	21,390
Field	26	2		57	3		3	2		23	5		109	1.24	12	.14	194,300	21,390
East Grand Boulevard	7	2		34	7		7	0		17	8		65	.74	17	.19	115,800	30,300
Helen	11	2		45	4		4	0		15	3		75	.85	9	.10	133,700	16,040
Canton	4	0		25	3		2	2		6	3		37	.42	8	.09	65,940	14,250
Concord	45	63	5.76	133	168	5.38	27	66	4.93	83	97	5.04	288	3.27	394	4.48	513,200	702,100
Bellevue	8	2		18	4		7	1		6	1		39	.44	8	.09	69,520	14,250
Beaufait	8	4		9	5		3	0		9	2		29	.33	11	.12	51,700	19,600

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SHERMAN LINE—WESTBOUND—Continued

Meldrum	5	0		20	3		7	0		4	0		36	.41	3	.03	64,150	5,348
Mt. Elliott-Kercheval	8	9		19	4		0	2		6	6		33	.38	21	.24	58,800	37,440
Waterloo	8	11		27	15		6	19		4	23		45	.51	68	.77	80,200	121,200
Hendricks-Mt. Elliott	24	2		34	13		22	5		21	13		101	1.15	33	.38	180,000	58,800
Burlage	4	0		8	2		1	1		1	2		14	.16	5	.06	24,950	8,911
Ellery	7	0		10	4		0	3		0	0		17	.19	7	.08	30,300	12,470
Trolley Station	0	0		0	3		0	1		0	0		0	0	4	.05	0	7,128
Elmwood	15	0	5.46	11	6	5.36	0	11	5.93	16	7	5.37	42	.48	24	.27	74,850	42,770
McDougall	3	0		8	4		3	1		2	7		16	.18	12	.14	28,510	21,390
Jos. Campau-Hendricks	8	8		7	10		1	16		8	8		24	.27	42	.48	42,770	74,840
Cleveland	4	3		1	4		0	0		3	1		8	.09	8	.09	14,250	14,250
Waterloo	2	0		12	4		1	4		7	1		22	.25	9	.10	39,200	16,040
Jay	3	0		14	4		2	2		3	12		22	.25	18	.20	39,200	32,070
Antietam	6	1		8	5		1	2		0	7		15	.17	15	.17	26,730	26,730
Chestnut	2	1		4	9		0	2		1	5		7	.08	17	.19	12,470	30,300
Maple	3	4		3	2		2	7		2	4		10	.11	17	.19	17,820	30,300
Sherman	15	4		35	9		2	3		10	14		62	.71	30	.34	110,400	53,480
Jos. Campau	6	2		8	2		1	1		7	4		22	.25	9	.10	39,200	16,040
Trolley Station	0	0		1	1		0	0		0	0		1	.01	1	.01	1,783	1,782
Chene	17	16		43	38		11	6		13	7		84	.96	67	.76	149,600	119,300
Dubois	10	2		20	3		3	9		7	7		40	.45	21	.24	71,290	37,440
St. Aubin	6	5	5.46	39	19	5.00	6	10	5.12	21	13	5.00	72	.82	47	.53	128,200	83,770
Dequindre	6	4		12	3		3	3		15	1		36	.41	11	.12	64,150	19,600
Orleans	4	18		26	6		6	8		12	26		48	.55	58	.66	85,550	103,300
Riopelle	12	3		17	19		2	5		3	6		34	.39	33	.38	60,600	58,800
Trolley Station	0	0		0	0		1	0		0	0		1	.01	0	0	1,783	0
Russell	8	3		21	9		1	4		3	4		33	.38	20	.23	58,800	35,640
Rivard	3	4		9	5		6	2		0	8		18	.20	19	.22	32,070	33,860
Hastings-Sherman	8	17		9	47		3	23		3	34		23	.26	121	1.38	40,990	215,700
Catherine	2	2		1	4		1	0		3	1		7	.08	7	.08	12,470	12,470
Mullett	1	0		5	0		1	1		1	0		8	.09	1	.01	14,250	1,782
Clinton-Hastings	13	9	5.06	10	3	4.91	4	3	4.50	8	5	4.91	35	.40	20	.23	62,380	35,640
Antoine	4	8		16	21		3	0		5	6		28	.32	35	.40	49,890	62,380
Raynor	0	6		7	3		0	2		1	3		8	.09	14	.16	14,250	24,950

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SHERMAN LINE—WESTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Beaubien	0	4		8	4		2	5		0	2		10	.11	15	.17	17,820	26,740
Brush-Clinton	2	13		7	38		1	8		2	5		12	.14	64	.73	21,390	114,000
Macomb-Brush	1	7		1	10		12	2		1	3		15	.17	22	.25	26,720	39,200
Randolph	9	70		36	132		26	25		25	71		96	1.09	298	3.39	171,000	531,000
Gratiot-Macomb Broadway	0	6		4	22		5	1		1	5		10	.11	34	.39	17,810	60,600
Library	2	27		40	81		64	13		14	23		120	1.37	144	1.64	213,700	256,700
Farmer	1	24		71	198		57	21		21	40		150	1.71	283	3.22	267,300	504,100
Woodward and State	22	171		149	330		107	44		69	127		347	3.95	672	7.63	618,500	1,197,000
Griswold	63	65		216	173		134	25		81	74		494	5.62	337	3.83	880,000	600,800
Shelby-State	4	7	6.23	25	40	6.54	19	6	6.81	8	14	6.12	56	.64	67	.76	99,800	119,300
Michigan-Shelby	17	38		113	68		49	17		34	31		213	2.42	154	1.75	379,600	274,500
Trolley Station	0	5		0	1		0	0		0	0		0	0	6	.07	0	10,690
Washingt'n Blvd	5	10		13	13		6	8		8	10		32	.36	41	.47	57,100	73,050
Abbott	5	9		15	33		24	3		9	8		53	.60	53	.60	94,450	94,450
1st	0	5		6	7		6	6		1	2		13	.14	20	.23	23,170	35,640
Porter-Mich. and 2d	2	16		11	18		13	16		10	11		36	.41	61	.69	64,150	108,600
3rd	5	12		13	19		18	6		14	9		50	.57	46	.52	89,120	82,000
4th	1	3		2	16		1	5		1	7		5	.06	31	.35	8,913	55,230
5th	4	16	4.84	0	15	4.94	1	8	5.50	1	9	4.29	6	.07	48	.55	10,690	85,530
6th	1	11		1	12		6	7		2	5		10	.11	35	.40	17,820	62,380
Brooklyn	1	34		3	44		7	28		0	29		11	.12	135	1.54	19,600	240,600
Left on car*	0	155		0	708		0	520		0	301		0	0	1,684	19.15	0	3,001,000
Total			37.27			36.75			36.91			34.85	5,650		5,650		10,068,059	10,068,059

*NOTE—During the period covered by this survey the Sherman Line west of Brooklyn was not operating over its regular route.

SHERMAN LINE—WESTBOUND

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Aver.	Off	Av. per car
Initial	686	0		966	0		195	0		1,847	28.86	0	0
Broadway	32	58		49	113		45	23		126	1.97	194	3.03
Library	9	17		40	66		41	10		90	1.41	93	1.45
Farmer	6	31		98	112		64	13		168	2.65	156	2.44
Woodward	32	189		149	263		106	35		281	4.39	487	7.6
Griswold	48	123		202	181		129	29		379	5.92	333	5.2
Shelby	5	25		35	37		11	4		51	.79	66	1.03
Michigan	51	62		120	53		49	7		220	3.43	122	1.9
Washington	10	5		21	6		9	2		40	.62	13	.20
Park Place	0	3		4	7		16	1		20	.31	11	.17
Cass	11	22		34	10		13	5		58	.90	37	.57
First	4	4		3	4		12	2		19	.29	10	.15
Porter	9	11	6.55	22	13	6.94	12	11	7.58	43	.67	35	.54
Final	353	0		878	0		554	0		1,785	27.9	0	0

Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	102	140	64	106	412
Number of cars observed	31	69	28	24	152
Per cent. of scheduled cars observed	30.4	49.3	43.8	22.6	36.9

SHERMAN LINE—EASTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
*Initial	425	0		1,174	0		242	0		277	0		2,118	24.12	0	0	3,160,000	0
Brooklyn	10	1		38	1		22	0		13	0		83	.94	2	.02	123,600	2,985
Sixth	2	3		11	2		8	0		5	0		26	.30	5	.06	38,780	7,450
Fifth	4	3		15	9		15	1		3	2		37	.42	15	.17	55,200	22,390
Fourth	1	4		2	10		12	1		1	1		16	.18	16	.18	23,900	23,850
Third	2	24		15	16		29	5		10	8		56	.64	53	.60	83,500	79,000
Second	2	2		7	9		13	1		3	2		25	.28	14	.16	37,280	20,900
First	0	6		3	2		7	1		5	3		15	.17	12	.14	22,400	17,910
Michigan	21	26		58	99		34	44		43	42		156	1.77	211	2.40	232,600	315,000
State-Cass	1	14		32	31		12	1		5	4		50	.57	50	.57	74,630	74,600
Wayne	0	0		7	6		12	0		1	2		20	.23	8	.09	29,820	11,925
Washington Bl.	4	23		19	65		25	5		20	6		68	.77	99	1.12	101,400	147,000
Shelby	24	34	5.08	155	106	5.37	107	22	5.15	88	16	4.39	374	4.25	178	2.02	557,600	265,142
Griswold	10	60		138	174		77	38		72	36		297	3.38	308	3.50	443,000	459,000
Woodward	36	75		488	339		182	47		189	71		895	10.18	532	6.05	1,334,000	793,000
Farmer	12	37		248	206		74	39		77	20		411	4.68	302	3.43	612,200	450,000
Library	1	8		61	29		8	6		8	3		78	.89	46	.52	116,300	68,600
Broadway	26	36		198	69		54	19		78	29		356	4.04	153	1.74	529,688	288,000
Randolph	9	5		88	14		12	1		44	12		153	1.74	32	.36	228,000	47,700
Brush	5	26	4.75	22	3	5.37	5	1	6.28	5	2	4.50	37	.42	32	.36	55,150	47,700
Trolley Station	1	3		0	0		0	0		0	1		1	.01	4	.05	1,492	5,960
Beaubien	2	6		11	11		7	2		5	3		25	.28	22	.25	37,300	32,800
Antoine	4	3		31	47		4	1		13	4		52	.59	55	.63	77,500	82,000
Hastings	3	12		13	33		1	15		9	9		26	.30	69	.79	38,775	102,800
Rivard	0	9	2.17	6	21	2.25	1	2	2.17	3	8	2.32	10	.11	40	.46	14,920	59,650
Russell	3	20		2	34		2	9		3	12		10	.11	75	.85	14,920	111,700

*NOTE—During the period covered by this survey the Sherman Line west of Brooklyn was not operating over its regular route.

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SHERMAN LINE—EASTBOUND—Continued

Clinton	0	6		1	13		0	5		1	7		2	.02	31	.35	2,985	46,200
Mullett	1	0		2	28		0	1		0	5		3	.03	34	.39	4,475	50,700
Catherine	3	6		18	25		4	12		2	12		27	.31	55	.63	40,300	82,000
Riopelle	1	6		7	46		3	14		8	11		19	.22	77	.88	28,360	114,600
Orleans	4	1		14	25		3	18		7	9		28	.32	53	.60	41,800	79,000
Dequindre	0	1		15	17		8	14		3	4		26	.30	36	.41	38,820	53,650
Trolley Station	0	0		3	8		0	0		2	2		5	.06	10	.11	7,460	14,910
St. Aubin	5	6	4.83	17	50	4.12	4	27	4.85	21	37	4.50	47	.53	120	1.36	70,200	179,000
Dubois	7	1		4	30		1	18		1	20		13	.15	69	.78	19,400	102,800
Chene	7	5		28	60		23	22		19	29		77	.88	116	1.32	115,000	173,000
Trolley Station	0	0		1	5		0	8		0	3		1	.01	16	.18	1,491	23,850
Jos. Campau	9	4		14	42		5	20		8	25		36	.41	91	1.03	53,750	135,800
Sherman	0	1		7	16		0	7		3	8		10	.11	32	.36	14,910	47,700
Maple	0	2		2	9		1	9		0	9		3	.03	29	.33	4,475	43,300
Chestnut	3	0		1	13		0	8		4	7		8	.09	28	.32	11,950	41,700
Antietam	3	0		2	4		0	3		2	8		7	.08	15	.17	10,450	22,400
Jay	7	3		3	18		0	7		1	4		11	.13	32	.36	16,420	47,700
Waterloo	11	2		12	28		6	21		13	11		42	.48	62	.70	62,700	92,400
McDougall	6	3		11	16		0	13		11	8		28	.32	40	.45	41,800	59,600
Elmwood (So.)	1	0	4.75	1	16	4.89	0	10	5.61	2	9	4.97	4	.05	35	.40	5,975	52,200
Elmwood (No.)	1	0		3	17		0	12		1	10		5	.06	39	.44	7,460	58,200
Trolley Sta	0	0		0	8		0	1		0	0		0	0	9	.10	0	13,435
Ellery	0	1		4	20		0	3		0	1		4	.05	25	.28	5,975	37,300
Burlage	0	0		0	6		0	2		0	3		0	0	11	.13	0	16,400
Mt. Elliott	11	41		71	65		66	38		15	41		163	1.85	185	2.10	243,169	276,000
Kercheval	2	10		14	11		1	6		0	3		17	.19	30	.34	25,380	44,700
Meldrum	1	1		3	30		0	3		2	6		6	.07	40	.45	8,960	59,600
Beaufait	0	7		2	21		1	2		3	4		6	.07	34	.39	8,960	50,700
Bellevue	0	7		2	26		0	5		0	11		2	.02	49	.56	2,985	73,100
Concord	51	20	5.58	198	100	5.14	121	42	5.39	169	49	4.89	539	6.13	211	2.40	803,000	314,400
Canton	0	1		6	37		0	12		1	18		7	.08	68	.72	10,450	101,400
Helen	0	1		5	37		1	12		7	20		13	.15	70	.80	19,400	104,300
E. Gr. Blvd	3	1		37	23		5	12		14	12		59	.67	48	.55	88,100	71,600
Field	0	9		10	59		2	29		3	23		15	.17	120	1.36	22,400	179,000
Sheridan	2	4		15	50		3	23		1	20		21	.24	97	1.10	31,340	144,500

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SHERMAN LINE—EASTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Townsend	0	6		7	70		0	29		7	29		14	.16	134	1.52	20,900	199,700
Baldwin	2	5		5	54		0	30		4	35		11	.13	124	1.41	16,420	185,000
Shipherd	1	4		14	84		2	52		2	62		19	.22	202	2.30	28,360	301,000
Van Dyke	3	17		13	84		1	51		1	52		18	.20	204	2.32	26,880	304,000
Parker	0	10		6	50		0	46		8	40		14	.16	146	1.66	20,900	218,000
Seminole	0	13		5	26		1	7		3	7		9	.10	53	.60	13,430	79,100
Iroquois	0	12	4.75	3	11	5.18	1	3	6.11	3	10	5.24	7	.08	36	.41	10,450	53,765
Burns	1	10		1	7		0	7		0	6		2	.02	30	.34	2,985	44,800
Fisher	0	6		2	72		0	35		2	31		4	.05	144	1.64	5,970	215,000
Crane	1	4		0	68		2	29		0	25		3	.03	126	1.43	4,475	188,000
Hibbard	0	4		1	39		0	15		0	16		1	.01	74	.84	1,492	110,300
Holcomb	0	1		1	44		1	27		0	31		2	.02	103	1.17	2,985	153,600
Belvidere	0	4		0	61		0	25		0	29		0	0	119	1.35	0	177,600
McClellan	0	1		0	88		0	45		0	50		0	0	184	2.12	0	274,800
Park View	0	6		0	48		0	23		0	23		0	0	100	1.14	0	149,200
Pennsylvania	0	4		0	61		0	21		0	43		0	0	129	1.47	0	192,500
Cadillac	0	2		0	42		0	20		0	18		0	0	82	.93	0	122,100
Hurlbut	0	56	3.83	0	209	4.46	0	66	5.0	0	82	4.44	0	0	413	4.69	0	613,870
Totals			35.74			36.79			40.56			35.25	6,753		6,753		10,068,058	10,068,058

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SHERMAN LINE—EASTBOUND

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	666	0		923	0		218	0		1,807	28.2	0	0
Abbott	22	38		42	55		43	24		107	1.67	117	1.83
Cass	2	19		26	10		10	2		38	.59	31	.48
Park	1	7		9	7		3	0		13	.20	14	.21
Washington	5	21		31	39		25	4		61	.95	64	1.00
Shelby	82	80		124	88		101	16		307	4.79	184	2.88
Griswold	24	104		120	141		86	29		230	3.59	274	4.28
Woodward	73	146		342	266		155	24		570	8.9	436	6.8
Farmer	12	79		152	116		62	22		226	3.53	217	3.39
Library	1	6		31	8		8	0		40	.62	14	.21
Broadway	36	47	6.05	144	77	6.71	87	26	7.30	267	4.16	150	2.34
Final	377	0		1,137	0		651	0		2,165	33.9	0	0

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Summary of both traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	87	140	60	109	396
Number of cars observed	31	78	20	23	152
Per cent. of scheduled cars observed	35.65	55.70	33.34	21.10	38.38

SOUTH CHENE LINE—NORTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Walkerville Ferry Dock	0	0		0	0		50	0		10	0		60	1.46	0	0	65,180	0
Atwater-Jos. C'p.	7	0		61	0		62	0		22	0		152	3.70	0	0	165,000	0
Trolley Station	0	0		4	0		35	0		4	0		43	1.04	0	0	46,700	0
Chene-Atwater	2	0		4	1		34	0		4	0		44	1.07	1	.02	47,500	1,085
Goin	0	0		3	0		27	0		0	0		30	.73	0	0	32,580	0
Wight	0	0		3	0		25	0		7	0		35	.85	0	0	38,000	0
Franklin	0	0		12	0		35	1		0	0		47	1.15	1	.02	51,000	1,085
Jefferson	9	0		30	20		96	11		21	2		156	3.81	33	.81	169,440	35,800
Larned	1	0		3	0		0	0		5	0		9	.22	0	0	9,770	0
Congress	2	0		3	5		6	2		10	3		21	.51	10	.24	22,800	10,850
Fort	8	0		4	1		5	9		10	1		27	.66	11	.27	29,300	11,950
Lafayette	3	0		10	7		5	3		9	0		27	.66	10	.24	29,300	10,850
Monroe	4	1		10	8		7	6		3	2		24	.58	17	.41	26,050	18,460
Macomb	1	1		2	0		1	0		4	1		8	.19	2	.05	8,680	2,170
Clinton	0	1		4	0		2	2		1	2		7	.17	5	.12	7,600	5,425
Mullett	0	1		0	0		0	3		6	0		6	.15	4	.10	6,515	4,340
Catherine	1	1		7	15		6	18		3	8		17	.41	42	1.03	18,463	45,583
Sherman	2	2		1	4		11	10		3	1		17	.41	17	.41	18,460	18,460
Maple	4	1		6	2		3	4		5	1		18	.44	8	.19	19,550	8,680
Chestnut	0	0		0	1		1	2		2	3		3	.07	6	.15	3,255	6,515
Antietam	0	0		2	5		0	3		1	1		3	.07	9	.22	3,255	9,770
Jay	0	0		1	0		2	2		0	1		3	.07	3	.07	3,255	3,255
Waterloo	1	5		0	3		2	2		0	0		3	.07	10	.24	3,255	10,850
Cleveland	0	1		1	1		0	6		0	0		1	.02	8	.19	1,085	8,680
Hendricks	0	0		0	5		1	2		0	0		1	.02	7	.17	1,085	7,600
Hunt	0	0		0	1		0	0		0	1		0	0	2	.05	0	2,170
Charlevoix	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Gratiot & Arndt.	0	31		0	92		0	330		0	103		0	0	556	13.56	0	603,000
Totals			14.83			10.61			11.90			10.50	762		762		827,078	827,078

Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	19	42	17	26	104
Number of cars observed	6	13	10	12	41
Per cent. of scheduled cars observed	31.6	31.0	58.8	46.2	39.4

SOUTH CHENE LINE—SOUTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Gratiot	230	0		108	0		161	0		99	0		598	14.60	0	0	634,650	0
Charlevoix	2	0		0	0		1	0		3	0		6	.15	0	0	6,400	0
Hunt	2	0		0	0		12	0		2	0		16	.39	0	0	17,000	0
Hendricks	5	0		3	4		1	4		1	2		10	.24	10	.24	10,650	10,610
Cleveland	2	0		2	3		0	1		2	1		6	.15	5	.12	6,380	5,310
Waterloo	2	1		4	2		1	2		0	1		7	.17	6	.15	7,440	6,370
Jay	5	0		2	0		0	4		2	2		9	.22	6	.15	9,560	6,370
Antietam	1	0		3	2		0	5		0	3		4	.10	10	.24	4,245	10,610
Chestnut	2	1		3	6		0	4		1	3		6	.15	14	.34	6,380	14,860
Maple	1	1		4	2		0	3		0	1		5	.12	7	.17	5,320	7,430
Sherman	10	0		19	5		9	3		5	3		43	1.04	11	.27	45,650	11,680
Catherine	3	2		5	6		2	9		4	3		14	.34	20	.49	14,900	21,228
Mullett	0	1		0	8		1	7		0	7		1	.02	23	.56	1,061	24,410
Clinton	1	2		0	4		1	9		0	7		2	.05	22	.54	2,122	23,360
Macomb	4	2		7	13		2	24		4	11		17	.41	50	1.22	18,100	53,100
Monroe	0	0		5	4		0	5		2	8		7	.17	17	.41	7,430	18,100
Lafayette	5	7		4	8		2	13		0	9		11	.27	37	.90	11,700	39,280
Fort	3	7		0	8		0	21		0	8		3	.07	44	1.07	3,195	46,700
Congress	0	2		3	10		0	7		0	9		3	.07	28	.68	3,195	29,750
Larned	0	1		0	4		0	1		0	2		0	0	8	.19	0	8,490
Jefferson	2	94		8	45		1	39		0	20		11	.27	198	4.84	11,700	210,200
Franklin	0	25		0	5		0	9		0	1		0	0	40	.98	0	42,470
Wight	0	9		0	6		0	2		0	0		0	0	17	.41	0	18,050
Goin	0	7		0	1		0	0		0	0		0	0	8	.19	0	8,490
Chene-Atwater	0	11		0	2		0	0		0	1		0	0	14	.34	0	14,860
Trolley Station	0	2		0	6		0	1		0	0		0	0	9	.22	0	9,550
Atwater-Jos. C'p	0	101		0	9		0	4		0	4		0	0	118	2.88	0	125,300
Walkerville Ferry Dock	0	4		0	17		0	17		0	19		0	0	57	1.39	0	60,500
Totals			13.67			12.74			13.25			12.68	779		779		827,078	827,078

Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	19	42	17	26	104
Number of cars observed	6	15	8	12	41
Per cent. of scheduled cars observed	31.6	35.7	47.0	46.2	39.4

SPRINGWELLS LINE—WESTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Livernois	15	0		87	0		96	0		68	0		266	14.78	0	0	398,000	0
Artillery	0	0		1	0		0	0		1	0		2	.11	0	0	2,993	0
Infantry	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Carter	0	0		9	0		0	0		0	0		9	.50	0	0	13,473	0
Waterman and Ferndale-Dix.	2	0		7	3		2	5		1	4		12	.67	12	.67	17,955	17,950
Reiden	1	0		0	1		0	1		0	0		1	.06	2	.11	1,496	2,993
Stair	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Honorah	0	0		0	0		0	5		1	1		1	.06	6	.33	1,496	8,978
Central	1	0		0	2		1	2		0	0		2	.11	4	.22	2,993	5,984
Casper	0	0		0	3		0	2		0	4		0	0	9	.50	0	13,470
Springwells-Ferndale	1	4		5	37		2	25		1	13		9	.50	79	4.38	13,470	118,200
Whittaker	0	0		4	2		0	4		0	5		4	.22	11	.61	5,984	16,460
Senator	0	1		0	4		0	4		0	2		0	0	11	.61	0	16,460
Navy	0	2		5	5		0	2		1	4		6	.33	13	.81	8,978	19,450
Gartner	0	0		0	2		1	0		0	3		1	.06	5	.28	1,496	7,480
Cahalan	0	0		1	2		0	4		1	4		2	.11	10	.56	2,993	14,960
Lane	2	1		1	4		0	4		0	2		3	.17	11	.61	4,489	16,460
Logan	0	0		1	3		0	0		0	2		1	.06	5	.28	1,496	7,480
Longw'th-Lodge & Bank Trolley Station	0	1		0	1		0	5		1	1		1	.06	8	.44	1,496	11,970
Homer and Mint	0	0		3	3		1	1		0	0		4	.22	4	.22	5,984	5,984
Rathbone	1	4		0	1		0	2		0	3		1	.06	10	.56	1,496	14,960
Chamberlain-Springwells	0	0		3	2		0	2		0	4		3	.17	8	.44	4,489	11,970
Trolley Station	0	0		0	1		0	0		1	0		1	.06	1	.05	1,496	1,496
Trolley Station	0	0		0	1		0	2		0	1		0	0	4	.22	0	5,984
Trolley Station	0	0		1	1		0	1		0	3		1	.06	5	.28	1,496	7,480

SPRINGWELLS LINE—WESTBOUND—Continued

Lawndale	0	1	5	3	0	2	3	4	8	.44	10	.56	11,980	14,963
Trolley Station	0	0	0	4	0	1	0	4	0	0	9	.50	0	13,470
Elsmere	0	0	5	2	0	8	0	4	5	.28	14	.78	7,480	20,954
Trolley Station	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Woodmere-Cha.	1	0	0	1	0	1	0	0	1	.06	2	.11	1,496	2,993
Lafayette	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Krupp	0	0	1	0	0	0	0	0	1	.06	0	0	1,496	0
Fort-Woodmere	1	4	3	11	3	8	4	3	11	.61	26	1.44	16,460	38,900
Trolley Station	0	0	1	0	0	0	0	0	1	.06	0	0	1,496	0
Trolley Station	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dearborn-Fort	3	1	3	4	2	3	5	2	13	.72	10	.56	19,460	14,960
Trolley Station	0	0	2	0	0	1	0	0	2	.11	1	.06	2,993	1,496
Stone	0	0	2	0	0	0	1	1	3	.17	1	.06	4,489	1,496
Barron	0	0	0	1	0	1	0	0	0	0	2	.11	0	2,993
Wood. and Carb.	0	0	2	1	0	1	0	0	2	.11	2	.11	2,993	2,993
Leigh & Sire T.S.	0	0	2	4	0	0	1	0	3	.17	4	.22	4,489	5,984
Herkimer	0	2	2	0	0	1	0	1	2	.11	4	.22	2,993	5,984
Mackie, Cobalt& Melville T. Sta.	0	0	2	3	0	0	0	0	2	.11	3	.17	2,993	4,489
Lyon	1	0	1	0	0	0	0	0	2	.11	0	0	2,993	0
Har. & Vand.T.S.	0	0	0	2	0	0	0	0	0	0	2	.11	0	2,993
Thaddeus	0	0	0	0	0	0	0	2	0	0	2	.11	0	2,993
Burdeno	0	0	0	1	0	0	0	4	0	0	5	.28	0	7,480
West Jefferson	0	8	0	44	0	10	0	9	0	0	71	3.94	0	106,270
Total		21.75		24.77		42.50		24.00	386		386		577,580	577,580

Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	30	35	10	22	97
Number of cars observed	4	10	2	3	19
Per cent of scheduled cars observed	13.3	28.6	20.0	13.6	19.6

SPRINGWELLS LINE—EASTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		*Time*	*Passengers*		*Time*	*Passengers*		*Time*	*Passengers*		*Time*	*Passengers On*		*Passengers Off*			
	On	*Off*	*Min.*	*On*	*Off*	*Min.*	*On*	*Off*	*Min.*	*On*	*Off*	*Min.*	*Total*	*Av. per car*	*Total*	*Av. per car*	*On*	*Off*
West Jefferson	31	0		56	0		12	0		16	0		115	6.05	0	0	183,000	0
Burdeno	0	0		2	0		1	0		4	0		7	.37	0	0	11,135	0
Thaddeus	0	0		0	0		3	0		1	0		4	.21	0	0	6,363	0
Harbaugh & Vanberbilt Trolley Sta	3	0		1	1		1	0		0	1		5	.34	2	.11	7,954	3,182
Lyon	0	0		1	0		0	1		0	1		1	.05	2	.11	1,591	3,182
Mackie, Cobalt & Melville Trolley Sta	0	0		4	1		0	0		1	0		5	.34	1	.05	7,954	1,591
Herkimer	2	0		0	0		1	0		1	1		4	.21	1	.05	6,363	1,591
Leigh and Sire Trolley Sta	2	0		4	3		1	0		3	0		10	.53	3	.02	15,910	4,772
Woodmere and Carbon	2	0		0	1		0	0		0	0		2	.11	1	.05	3,182	1,591
Barron	0	0		0	0		1	0		0	0		1	.05	0	0	1,591	0
Stone	0	0		0	0		0	0		2	0		2	.11	0	0	3,182	0
Dearborn-Fort	6	27		7	9		1	1		4	5		18	.95	42	2.21	28,630	66,850
Trolley Station	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Trolley Station	0	0		1	1		0	0		0	0		1	.05	1	.05	1,591	1,591
Fort-Woodmere	8	1		5	5		7	2		3	0		23	1.21	8	.42	36,590	12,730
Krupp	0	0		0	0		0	0		0	1		0	0	1	.05	0	1,591
Lafayette	0	0		0	0		0	0		0	1		0	0	1	.05	0	1,591
Woodmere-Chamberlain	1	0		3	0		0	0		0	0		4	.21	0	0	6,363	0
Trolley Station	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Elsmere	1	0		3	4		0	2		5	2		9	.47	8	.42	14,325	12,730
Trolley Station	0	0		1	0		0	0		0	0		1	.05	0	0	1,591	0
Lawndale	5	1		5	4		1	1		3	4		14	.74	10	.53	22,280	15,960

SPRINGWELLS LINE—EASTBOUND—Continued

Trolley Station	0	0		0	1		0	1		0	0		0	0	2	.11	0	3,182
Trolley Station	0	0		0	0		0	0		1	0		1	.05	0	0	1,591	0
Chamberlain-Springfields	0	0		4	1		2	1		2	0		8	.42	2	.11	12,725	3,182
Rathbone	7	0		3	1		1	0		3	0		14	.74	1	.05	22,280	1,591
Homer & Mint	0	0		3	0		0	1		0	0		3	.16	1	.05	4,772	1,591
Longw'th-Lodge & Bank Trolley Station	2	0		6	3		1	2		1	1		10	.05	6	.32	15,910	9,548
Logan	0	0		1	0		2	0		0	4		3	.16	4	.21	4,772	6,363
Lane	3	2		1	1		0	3		0	0		4	.21	6	.32	6,363	9,548
Cahalon	1	0		4	0		1	2		2	0		8	.42	2	.11	12,740	3,182
Gartner	1	0		4	1		0	0		1	2		6	.32	3	.16	9,548	4,772
Navy	1	0		7	5		1	0		0	2		9	.47	7	.37	14,330	11,145
Senator	0	2		1	0		0	2		0	0		1	.05	4	.21	1,591	6,363
Whittaker	0	0		7	2		0	1		0	0		7	.37	3	.16	11,140	4,772
Springwells-Ferndale	3	1		21	9		4	2		12	3		40	2.1	15	.79	63,618	23,890
Casper	0	0		2	1		1	0		0	0		3	.16	1	.05	4,772	1,591
Central	0	0		3	2		2	2		1	1		6	.32	5	.26	9,548	7,954
Honorah	0	0		0	0		0	0		0	1		0	0	1	.05	0	1,591
Stair	0	0		0	0		0	0		0	1		0	0	1	.05	0	1,591
Reiden	2	6		0	0		0	1		0	0		2	.11	7	.37	3,182	11,135
Waterman and Ferndale-Dix	1	4		5	8		2	0		0	1		8	.42	13	.68	12,740	20,690
Carter	1	0		1	4		1	0		0	1		3	.16	5	.26	4,772	7,954
Infantry	0	3		1	4		0	1		0	0		1	.05	8	.42	1,591	12,730
Artillery	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Livernois	0	36		0	95		0	21		0	33		0	0	185	9.74	0	294,263
Totals			22.33			22.11			25.00			27.50	363		363		577,580	577,580

Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
No. of cars scheduled	30	35	10	22	97
No. of cars observed	3	10	2	4	19
Per cent. of scheduled cars observed	10.0	28.6	20.0	18.2	19.6

TRUMBULL LINE—NORTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Jefferson	0	0		34	0		30	0		32	0		96	1.45	0	0	98,900	0
Larned	0	0		8	4		16	0		3	0		27	.41	4	.06	27,820	4,120
Congress-Bates	0	0		13	1		11	1		6	0		30	.46	2	.03	30,900	2,060
Woodward	0	0		65	0		60	0		90	0		215	3.26	0	0	221,700	0
Griswold-Cong	1	0		41	0		41	0		19	0		102	1.55	0	0	105,100	0
Fort	7	0		88	0		48	0		41	1		184	2.79	1	.02	189,663	1,030
Michigan-Grisw	4	0		221	1		140	0		197	0		562	8.51	1	.02	579,200	1,030
Shelby	1	0		114	2		61	0		76	0		252	3.82	2	.03	259,914	2,060
Trolley Station	0	0		5	2		3	0		4	0		12	.18	2	.03	12,370	2,060
Wash. Blvd. & Wayne	1	0		31	0		7	0		28	0		67	1.01	0	0	69,000	0
Cass and Park	0	0	6.17	36	2	6.75	16	0	9.00	28	3	6.7	80	1.21	5	.08	82,420	5,160
Abbott Trol. Sta.	2	0		18	0		5	0		24	0		49	.74	0	0	50,500	0
1st	0	0		13	1		15	0		11	0		39	.59	1	.02	40,200	1,030
2d & Porter	0	1		23	2		6	2		6	0		35	.53	5	.08	36,100	5,160
3d	3	0		16	2		7	1		27	0		53	.80	3	.05	54,600	3,090
4th	2	0		8	2		7	2		20	3		37	.56	7	.11	38,120	7,210
5th	1	0		13	4		9	2		9	3		32	.49	9	.14	33,000	9,280
6th	5	0		11	4		4	2		13	5		33	.50	11	.17	34,000	11,340
Brooklyn	5	2		13	7		6	1		5	6		29	.44	16	.24	29,900	16,500
8th	1	0		8	2		5	1		1	0		15	.22	3	.05	15,450	3,090
Trumbull-Mich	31	0		109	9		41	6		99	8		280	4.25	23	.36	288,600	23,700
Orchard	0	0	4.83	5	3	4.3	0	0	5.25	3	0	4.58	8	.12	3	.05	8,240	3,090
Plum	0	0		3	2		0	0		5	1		8	.12	3	.05	8,240	3,090
Cherry	1	0		7	3		2	5		4	8		14	.21	16	.24	14,430	16,500
High	2	0		8	21		1	11		5	22		16	.24	54	.82	16,500	55,650
Locust	1	2		8	26		2	10		13	15		24	.36	53	.80	24,720	54,600
Pine	3	0		5	21		1	9		6	20		15	.23	50	.76	15,450	51,500
Spruce	2	0		6	22		0	8		6	32		14	.21	60	.91	14,430	61,800
Perry	1	1		2	10		0	6		0	15		3	.05	32	.49	3,090	33,000
Bagg	5	5		28	49		10	14		18	31		61	.93	99	1.50	62,850	102,100

TRUMBULL LINE—NORTHBOUND—Continued

Butternut	2	0		6	21		0	10		2	13		10	.15	44	.67	10,300	45,350
Elm	3	1		3	18		1	11		3	10		10	.15	40	.61	10,300	41,220
Ash	0	2		4	11		2	4		5	32		11	.17	49	.74	11,340	50,561
Sycamore	0	0		1	4		0	2		4	5		5	.07	11	.17	5,160	11,340
Myrtle	7	5		59	35		30	16		43	21		139	2.11	79	1.20	143,400	81,400
Grand River	7	4	4.40	34	26	4.05	10	14	5.88	36	28	4.70	87	1.32	72	1.09	89,600	74,200
Brainard	2	2		24	13		3	2		9	11		38	.58	28	.42	39,160	28,860
Selden	2	4		9	16		6	20		9	23		26	.39	63	.96	26,800	64,900
Alexandrine	2	2		6	42		1	15		9	30		18	.27	89	1.35	18,550	91,700
Willis	2	0		12	38		3	17		6	25		23	.35	80	1.21	23,700	82,448
Calumet	0	2		5	44		1	16		2	25		8	.12	87	1.32	8,240	89,600
Canfield	0	5		10	25		1	25		1	39		12	.18	94	1.42	12,360	96,850
Lysander	0	4		4	27		0	22		4	21		8	.12	74	1.12	8,240	76,300
Forest	10	4		61	70		18	53		42	65		131	1.99	192	2.91	135,123	198,000
Hancock	0	1		1	34		0	26		0	27		1	.02	88	1.33	1,030	90,750
Warren	7	23		15	124		1	62		12	92		35	.53	301	4.57	36,080	310,251
Putnam	0	1		0	63		0	48		0	63		0	0	175	2.66	0	180,550
Merrick	0	9		2	79		0	39		0	79		2	.03	206	3.12	2,060	212,300
Kirby	0	5		1	90		0	47		0	67		1	.02	209	3.17	1,030	215,400
Hudson	0	1		0	41		0	19		0	25		0	0	86	1.30	0	88,650
Stanley	0	37	6.20	0	194	7.67	0	82	9.12	0	112	6.62	0	0	425	6.45	0	438,000
			21.60			23.22			29.25			22.60	2,957		2,957		3,047,880	3,047,880

TRUMBULL LINE—NORTHBOUND

Traffic count in congested district

Streets	First Period			Second Period			Third Period			TOTAL			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Aver.	Off	Av. per car
Woodbridge	0	0		0	0		0	0		0	0	0	0
Bates	5	0		46	0		41	0		92	.85	0	0
Jefferson	4	0		27	0		48	0		79	.73	0	0
Larned	1	0		19	0		29	0		49	.45	0	0
Congress	5	0		29	2		29	0		63	.58	2	.02
Woodward	7	0		91	0		92	0		190	1.76	0	0
Griswold	26	0		85	0		77	0		188	1.74	0	0
Fort	39	0		140	4		114	0		293	2.71	4	.04
Lafayette	40	0		356	2		246	1		642	5.94	3	.03
Shelby	17	0		179	1		66	1		262	2.42	2	.02
Washington	1	1		49	2		24	3		74	.68	6	.06
Park Place	5	0		16	0		16	1		37	.34	1	.01
Cass	14	1		62	2		19	2		95	.87	5	.05
First	10	0		31	2		21	1		62	.57	3	.03
Second	7	1		33	1		26	0		66	.61	2	.02
Third	17	1		42	7		22	0		81	.79	8	.08
Fourth	9	1		24	9		10	4		43	.39	14	.12
Fifth	23	1		27	11		9	3		59	.54	15	.13
Sixth	0	0		5	4		9	5		14	.13	9	.08
Brooklyn	16	7		29	14		20	8		65	.6	29	.26
Eighth	12	4		11	10		11	5		34	.31	19	.17
Trumbull	246	4		179	27		116	11		541	5.01	42	.39
Final		483			1,382			1,000				2,865	26.53

Summary of both traffic counts

	First Period	Second Period	Third Period	Fourth Period	TOTAL
Number of cars scheduled	54	79	41	64	238
Number of cars observed	37	92	26	19	174
Per cent. of cars observed	68.5	116.4	63.4	29.7	73.1

TRUMBULL LINE—SOUTHBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Stanley	63	0		168	0		167	0		105	0		503	7.62	0	0	566,600	0
Hudson	6	0		48	0		17	0		20	0		91	1.37	0	0	102,500	0
Kirby	44	2		99	3		21	0		54	0		218	3.30	5	.08	245,600	5,635
Merrick	24	0		79	1		16	2		29	0		148	2.24	3	.05	166,900	3,380
Putnam	14	0		65	0		17	0		50	0		146	2.21	0	0	164,500	0
Warren	24	15		73	33		14	41		47	27		158	2.39	116	1.76	178,000	130,800
Hancock	10	0		42	1		9	0		6	1		67	1.01	2	.03	75,450	2,250
Forest	32	9		99	17		66	18		62	22		259	3.92	66	1.00	292,042	74,350
Lysander	14	1		65	0		2	1		8	1		89	1.35	3	.05	100,300	3,380
Canfield	13	0		41	1		3	1		22	5		79	1.20	7	.11	89,000	7,890
Calumet	12	0		36	2		7	2		22	2		77	1.17	6	.09	86,800	6,760
Willis	9	0		38	9		5	2		6	4		58	.87	15	.23	65,350	16,950
Alexandrine	14	0		24	4		6	6		17	3		61	.92	13	.20	68,750	14,650
Selden	9	4		29	13		10	5		6	8		54	.82	30	.46	60,800	33,850
Brainard	0	0		0	0		0	0		3	0		3	.05	0	0	3,380	0
Grand River	6	35	7.62	17	98	7.74	3	31	6.90	8	60	7.26	34	.52	224	3.40	38,300	252,400
Myrtle	32	7		43	28		13	24		55	19		143	2.17	78	1.18	161,100	87,960
Sycamore	2	0		9	7		2	5		8	4		21	.32	16	.24	23,660	18,025
Ash	9	1		11	2		6	6		9	4		35	.53	13	.20	39,400	14,650
Elm	6	1		13	1		3	8		7	7		29	.44	17	.26	32,680	19,150
Butternut	3	0		15	2		2	0		10	6		30	.46	8	.12	33,800	9,100
Bagg	12	3		42	14		7	9		17	7		78	1.18	33	.50	87,900	37,187
Perry	7	0		10	6		0	2		5	10		22	.33	18	.27	24,300	20,290
Spruce	9	0		19	11		0	4		7	7		35	.53	22	.33	39,400	24,800
Pine	7	4		8	6		5	3		4	4		24	.36	17	.26	27,030	19,150
Locust	8	5		21	24		1	10		13	9		43	.65	48	.73	48,450	54,050
High	1	1		5	6		1	1		4	2		11	.17	10	.15	12,400	11,260
Cherry	1	4		2	4		0	5		3	0		6	.09	13	.20	6,760	14,650
Plum	0	0		4	10		0	5		1	2		5	.08	17	.26	5,635	19,150
Michigan, Trumbull, Orchard	2	66	4.62	5	91	4.43	0	94	4.73	7	91	4.79	14	.21	342	5.18	15,760	385,200

TRUMBULL LINE—SOUTHBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			Total				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Brooklyn	5	5		21	21		3	9		8	5		37	.56	40	.61	41,700	45,050
6th	6	12		14	18		3	5		7	6		30	.46	41	.62	33,800	46,200
5th	1	5		7	8		1	2		4	5		13	.20	20	.30	14,650	22,500
4th	7	4		11	12		3	0		6	10		27	.41	26	.39	30,457	29,300
3d	2	8		1	24		4	6		5	8		12	.18	46	.70	13,525	51,800
Porter and 2d	2	15		8	32		3	9		3	13		16	.24	69	1.04	18,051	77,733
1st	0	0		3	15		1	2		2	13		6	.09	30	.46	6,760	33,800
Abbott	0	10		4	19		0	5		0	15		4	.06	49	.74	4,500	55,200
Cass & Park T.S.	0	3	4.62	1	22	4.45	0	7	4.18	1	9	4.5	2	.03	41	.62	2,250	46,150
Wayne & Wash. Blvd	0	5		2	35		0	11		0	8		2	.03	59	.89	2,250	66,400
Shelby	0	12		1	86		0	10		0	23		1	.02	131	1.98	1,126	147,500
Gris. Michigan	2	64		0	330		0	24		0	107		2	.03	525	7.96	2,250	591,800
Fort	0	41		0	70		0	17		0	48		0	0	176	2.67	0	198,400
Congress	1	14		1	38		0	9		0	13		2	.03	74	1.12	2,250	83,350
Larned	0	13		1	19		0	3		0	11		1	.02	46	.70	1,126	51,800
Jefferson	0	21		0	22		1	6		0	18		1	.02	67	1.02	1,126	75,450
Woodbridge-Gris	0	6		1	7		0	1		0	0		1	.02	14	.21	1,126	15,780
Woodward	0	7		3	23		1	4		2	15		6	.09	49	.74	6,760	55,200
Bates-Woodbr'e	0	16	6.00	1	15	6.79	0	8	6.90	0	21	6.33	1	.02	60	.91	1,126	67,550
			22.86			23.41			22.71			22.88	2,705		2,705		3,047,880	3,047,880

TRUMBULL LINE—SOUTHBOUND

Traffic count in congested district

Streets	First Period			Second Period			Third Period			Total			
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Av. per car	Off	Av. per car
Initial	1,294	0		1,427	0		381	0		3,102	28.72	0	0
Trumbull	10	222		25	169		0	154		35	.32	545	5.05
Eighth	6	36		22	13		6	5		34	.22	54	.50
Brooklyn	12	25		10	22		3	18		25	.23	65	.60
Sixth	31	18		19	14		7	11		57	.53	43	.40
Fifth	15	23		18	17		3	12		36	.33	52	.48
Fourth	15	22		12	25		4	6		31	.29	53	.49
Third	13	73		7	32		7	11		27	.25	116	1.07
Second	8	43		12	43		5	12		25	.23	98	.91
First	8	29		8	29		1	6		17	.16	64	.59
Cass	4	57		6	40		1	9		11	.10	106	.98
Wayne	2	49		2	61		0	13		4	.04	123	1.14
Shelby	1	99		4	138		1	23		6	.06	260	2.31
Griswold	5	262		0	489		2	52		7	.06	803	7.43
Fort	1	172		2	223		0	38		3	.03	433	4.0
Congress	0	74		1	88		0	10		1	.09	172	1.59
Larned	0	64		0	67		0	16		0	0	147	1.36
Jefferson	0	73		0	45		1	11		1	.09	129	1.19
Woodbridge	0	22		2	21		0	8		2	.02	51	.47
Woodward	0	28		0	26		0	0		0	0	54	.50
Bates	0	34	11.83	1	16	11.52	0	7	12.69	1	.09	57	.53

Summary of both traffic counts

	First Period	Second Period	Third Period	Fourth Period	Total
Number of scheduled cars	53	80	41	63	237
Number of cars observed	39	89	27	19	174
Per cent. of cars observed	73.6	111.2	65.8	30.2	73.4

WEST WARREN LINE—WESTBOUND

Traffic count for full length of line

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off		Prorated as per Count	
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Initial	2	0		6	0		27	0		4	0		39	1.86	0	0	54.810	0
Bates	2	0		1	0		2	0		0	0		5	.24	0	0	7,029	0
Jefferson	2	0		6	0		9	0		1	0		18	.88	0	0	25,302	0
Larned	0	0		2	0		3	0		0	0		5	.24	0	0	7,029	0
Congress	0	0		6	1		0	0		0	0		6	.29	1	.05	8,433	1,406
Cadillac Sq.	0	0		10	0		11	0		4	1		25	1.22	1	.05	35,140	1,406
Farmer	3	0		10	0		12	1		0	0		25	1.22	1	.05	35,140	1,406
Monroe	0	0		8	1		16	0		5	1		29	1.41	2	.10	40,768	2,812
Gratiot	1	1		18	2		16	0		3	0		38	1.85	3	.15	53,401	4,217
Woodward	2	0		22	0		25	0		17	0		66	3.22	0	0	92,783	0
Trolley Sta.	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Griswold-State	7	0		44	0		49	1		24	0		124	6.42	1	.05	174,420	1,407
Grand River	1	0		7	0		13	0		6	0		27	1.32	0	0	37,952	0
Griswold-Cliff	1	0		7	0		7	0		0	0		15	.73	0	0	21,091	0
Washington Blvd.	0	3		11	0		12	0		3	0		26	1.27	3	.15	36,541	4,217
Park	0	0		1	0		2	1		1	1		4	.19	2	.10	5,621	2,812
Bagley	0	0		1	0		6	0		0	0		7	.34	0	0	9,840	0
Middle	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Adams	0	0		0	1		2	0		0	0		2	.10	1	.05	2,812	1,406
Elizabeth	0	0		1	0		0	0		0	0		1	.05	0	0	1,406	0
Columbia	0	0		2	3		1	0		0	0		3	.15	3	.15	4,217	4,127
Montcalm	0	1		2	1		1	0		0	0		3	.15	2	.10	4,217	2,812
High	0	0		2	2		1	1		0	1		3	.15	4	.19	4,217	5,621
Duffield	0	0		0	0		0	0		0	2		0	0	2	.10	0	2,812
Henry	1	0		3	2		0	4		0	3		4	.19	9	.44	5,622	12,650
Sibley	0	0		0	2		0	1		0	0		0	0	3	.15	0	4,217

WEST WARREN LINE—WESTBOUND—Continued

Sproat	0	0		3	1		0	1		2	0		5	.24	2	.10	7,029	2,812
Bagg	0	0		0	2		1	2		0	1		1	.05	5	.24	1,406	7,029
Second, East	0	0		1	1		1	0		1	0		3	.15	1	.05	4,217	1,406
Second, North	0	0		3	6		1	6		0	1		4	.19	13	.63	5,621	18,312
Second, West	0	0		1	2		0	2		0	1		1	.05	5	.24	1,406	7,029
Third	0	0		0	5		4	3		0	0		4	.19	8	.39	5,621	11,296
Fourth	0	1		0	3		0	2		0	0		0	0	6	.29	0	8,433
Fifth	0	1		0	2		0	0		0	0		0	0	3	.15	0	4,217
Greenwood	0	0		5	6		1	1		0	0		6	.29	7	.34	8,433	9,840
Grand River	1	0		0	1		3	1		2	0		6	.29	2	.10	8,433	2,812
Sixth	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Brooklyn	0	0		0	1		0	1		0	3		0	0	5	.24	0	7,029
Trolley Sta	0	0		0	1		0	0		0	0		0	0	1	.05	0	1,406
Trumbull	1	2		1	2		7	2		1	0		10	.49	6	.29	14,093	8,433
National	0	0		0	1		0	0		0	1		0	0	2	.10	0	2,812
Harrison	0	0		4	0		0	4		0	2		4	.19	6	.29	5,621	8,433
Twelfth	1	0		1	2		0	2		0	2		2	.10	6	.29	2,812	8,433
Vermont	0	0		5	2		2	3		0	2		7	.34	7	.34	9,840	9,840
Wabash	0	0		6	1		0	2		3	0		9	.44	3	.15	12,681	4,217
Fourteenth	1	1		5	12		7	6		0	0		13	.63	19	.93	18,262	26,751
Butternut	0	0		1	1		0	4		0	1		1	.05	6	.29	1,406	8,433
Ash	0	0		5	1		2	3		2	0		9	.44	4	.19	12,678	5,621
Myrtle	0	1		6	2		1	0		0	2		7	.34	5	.24	9,840	7,029
Magnolia	0	0		1	0		2	6		0	1		3	.15	7	.34	4,217	9,840
Linden	0	1		1	3		0	8		1	0		2	.10	12	.58	2,813	16,868
Poplar	1	0		2	0		1	7		0	0		4	.19	7	.34	5,621	9,840
Buchanan	0	0		4	2		1	5		1	3		6	.29	10	.49	8,433	14,063
Breckenridge	0	0		2	2		0	0		0	0		2	.10	2	.10	2,812	2,812
Gr. River	0	0		1	6		0	7		0	2		2	.10	15	.73	2,812	21,091
Forest	0	0		2	2		1	7		0	0		14	.68	4	.19	19,728	5,621
Hancock	0	0		0	1		12	2		0	0		0	0	3	.15	0	4,217
Fourteenth	3	3		19	10		0	2		0	0		36	1.76	24	.12	50,608	33,771
Fifteenth	3	0		0	1		9	8		5	3		3	.15	2	.10	4,217	2,812
Sixteenth	3	2		25	5		3	1		0	0		69	3.36	9	.44	97,043	12,651
Seventeenth	0	0		0	1		18	2		23	0		2	.10	1	.05	2,812	1,406
							2	0		0	0							

WEST WARREN LINE—WESTBOUND—Continued

Streets	First Period Passengers On	First Period Passengers Off	First Period Time Min.	Second Period Passengers On	Second Period Passengers Off	Second Period Time Min.	Third Period Passengers On	Third Period Passengers Off	Third Period Time Min.	Fourth Period Passengers On	Fourth Period Passengers Off	Fourth Period Time Min.	TOTAL Passengers On Total	TOTAL Passengers On Av. per car	TOTAL Passengers Off Total	TOTAL Passengers Off Av. per car	Annual Passengers, 1913 Prorated as per Count On	Annual Passengers, 1913 Prorated as per Count Off
Humboldt	0	2		2	5		2	4		0	2		4	.19	13	.63	5,621	18,262
Lawton	4	1		0	13		13	5		2	2		19	.93	21	.10	26,731	29,558
Maybury	0	1		0	10		0	7		0	7		0	0	25	1.22	0	35,190
Williams	0	0		0	8		0	3		0	3		0	0	14	.68	0	19,678
Tillman	0	1		3	6		0	7		0	1		3	.15	15	.73	4,217	21,091
Twenty-third	0	1		0	13		0	15		0	1		0	0	30	1.46	0	42,168
Twenty-fourth	1	1		0	7		0	12		0	3		1	.05	23	1.12	1,406	32,362
Twenty-fifth	0	1		0	7		0	12		0	2		0	0	22	1.07	0	30,911
Roosevelt	0	1		2	13		0	17		0	6		2	.10	37	1.80	2,812	51,995
McKinley	0	1		0	11		1	12		0	7		1	.05	31	1.51	1,407	43,568
Vinewood	0	0		0	10		0	6		0	10		0	0	26	1.27	0	36,570
W. Gr. Blvd.	0	0		0	9		0	10		0	11		0	0	30	1.46	0	42,168
LaSalle	0	1		0	7		0	8		0	2		0	0	18	.88	0	25,332
Scotten	0	1		0	15		0	20		0	4		0	0	40	1.95	0	56,231
Lovett	0	0		0	11		0	12		0	1		0	0	24	1.17	0	33,721
Twenty-eighth	0	1		0	8		0	13		0	2		0	0	24	1.17	0	33,741
Thirtieth	0	2		0	5		0	12		0	3		0	0	22	1.07	0	30,927
Thirty-first	0	6		0	20		0	33		0	10		0	0	69	3.36	0	96,996
Totals			32.67			34.50			36.75			31.16	740		740		1,040,500	1,040,500

Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
No. of cars scheduled	10	34	13	17	74
No. of cars observed	3	8	4	6	21
Per cent. of scheduled cars observed	30.0	23.5	30.8	35.3	28.4

WEST WARREN LINE—EASTBOUND

Traffic count for full length of line

Streets	First Period Passengers On	First Period Passengers Off	First Period Time Min.	Second Period Passengers On	Second Period Passengers Off	Second Period Time Min.	Third Period Passengers On	Third Period Passengers Off	Third Period Time Min.	Fourth Period Passengers On	Fourth Period Passengers Off	Fourth Period Time Min.	TOTAL Passengers On Total	TOTAL Passengers On Av. per car	TOTAL Passengers Off Total	TOTAL Passengers Off Av. per car	Annual Passengers, 1913 Prorated as per Count On	Annual Passengers, 1913 Prorated as per Count Off
Thirty-first	11	0		4	0		4	0		4	0		23	1.09	0	0	45,075	0
Thirtieth	2	0		15	0		5	0		8	0		30	1.43	0	0	58,794	0
Twenty-eighth	4	0		9	0		0	0		2	0		15	.71	0	0	29,307	0
Lovett	0	0		3	0		0	0		1	0		4	.19	0	0	7,839	0
Scotten	5	0		8	0		1	0		3	0		17	.81	0	0	33,306	0
La Salle	2	0		8	0		0	0		6	0		16	.76	0	0	31,353	0
West Gr. Blvd.	2	0		11	0		0	0		6	0		19	.90	0	0	37,213	0
Vinewood	2	0		3	0		1	0		11	1		17	.81	1	.05	33,306	1,959
McKinley	1	0		7	0		1	0		4	0		13	.62	0	0	25,478	0
Roosevelt	2	0		6	0		1	0		1	0		10	.48	0	0	19,593	0
Twenty-fifth	5	0		10	0		0	0		3	0		18	.86	0	0	35,275	0
Twenty-fourth	1	1		2	1		0	0		5	0		8	.38	2	.10	15,672	3,919
Twenty-third	2	0		6	0		2	1		0	1		10	.48	2	.10	19,593	3,919
Tillman	0	0		8	0		1	0		2	0		11	.52	0	0	21,555	0
Williams	0	0		8	0		1	0		0	0		9	.43	0	0	17,633	0
Maybury	2	0		2	0		1	0		3	0		8	.38	0	0	15,672	0
Lawton	5	0		6	0		1	3		7	0		19	.90	3	.14	37,213	5,878
Humboldt	0	0		0	0		1	0		0	0		1	.05	0	0	1,959	0
Seventeenth	0	0		0	0		0	0		0	2		0	0	2	.10	0	3,919
Grand River	0	5		0	15		1	4		0	19		1	.05	43	2.05	1,959	84,249
Sixteenth	0	0		3	3		0	1		0	0		3	.14	4	.19	5,878	7,839
Fifteenth	0	0		2	0		0	0		0	0		2	.10	0	0	3,919	0
Fourteenth	0	1		4	3		1	1		1	3		6	.29	8	.38	11,758	15,672
Hancock	1	0		3	1		0	0		0	0		4	.19	1	.05	7,839	1,959
Forest & Gr. Riv.	7	1		5	3		5	0		10	2		27	.29	6	.29	52,893	11,758
Breckenridge	4	0		0	0		1	0		2	0		7	.33	0	0	13,716	0
Buchanan	2	0		4	0		0	1		1	4		7	.33	5	.24	13,716	9,799
Poplar	3	0		5	1		0	1		0	1		8	.38	3	.14	15,672	5,878
Linden	2	0		3	0		0	0		1	0		6	.29	0	0	11,758	0
Magnolia	5	0		2	0		0	2		0	1		7	.33	3	.14	13,716	5,878

WEST WARREN LINE—EASTBOUND—Continued

Streets	First Period			Second Period			Third Period			Fourth Period			TOTAL				Annual Passengers, 1913 Prorated as per Count	
	Passengers		Time	Passengers		Time	Passengers		Time	Passengers		Time	Passengers On		Passengers Off			
	On	Off	Min.	On	Off	Min.	On	Off	Min.	On	Off	Min.	Total	Av. per car	Total	Av. per car	On	Off
Myrtle	1	2		3	4		0	1		1	2		5	.24	9	.43	9,799	17,633
Ash	2	0		2	3		0	0		1	0		5	.24	3	.14	9,799	5,878
Butternut	1	1		1	0		0	0		4	1		6	.29	2	.10	11,758	3,919
Bagg	3	0		2	0		0	0		1	0		6	.29	0	0	11,758	0
Perry	2	1		3	0		0	0		1	0		6	29	1	.05	11,758	1,959
Pine	2	2		2	2		0	1		0	2		4	.19	7	.33	7,839	13,716
Locust	1	9		6	16		0	1		0	3		7	.33	29	1.38	13,716	56,862
Wabash	2	0		8	0		0	1		1	1		11	.52	2	.10	21,555	3,919
Vermont	1	1		2	1		0	0		0	1		3	.14	3	.14	5,878	5,878
Twelfth	2	0		9	2		1	0		0	0		12	.57	2	.10	23,509	3,919
Harrison	1	0		4	0		1	1		0	0		6	.29	1	.05	11,758	1,959
National	1	1		2	0		0	0		2	0		5	.24	1	.05	9,799	1,959
Trumbull	5	2		9	3		0	0		6	1		20	.95	6	.29	39,202	11,758
Trolley Sta.	0	0		1	1		0	0		0	0		1	.05	1	.05	1,959	1,959
Brooklyn	7	1		4	0		0	0		2	0		13	.62	1	.05	25,478	1,959
Sixth	0	0		1	3		0	0		2	2		3	.14	5	.24	5,878	9,799
Fifth	0	1		3	1		0	0		0	0		3	.14	2	.10	5,878	3,919
Fourth	0	0		1	2		0	0		0	1		1	.05	3	.14	1,959	5,878
Grand River	1	3		11	2		0	1		1	4		13	.62	10	.48	25,478	19,593
Third	0	0		0	0		0	0		0	0		0	0	0	0	0	0
Second	4	2		3	1		1	0		2	0		10	.48	3	.14	19,593	5,878
Cass	0	1		2	0		0	0		1	4		3	.14	5	.24	5,878	9,799
Clifford	2	2		2	3		0	0		0	2		4	.19	7	.33	7,839	13,716
Duffield	1	0		1	0		0	0		0	0		2	.10	0	0	3,919	0
High	0	0		0	1		0	0		0	0		0	0	1	.05	0	1,959
Montcalm	0	1		0	1		0	0		0	0		0	0	2	.10	0	3,919
Columbia	0	1		0	1		0	0		0	0		0	0	2	.10	0	3,919
Elizabeth	0	1		0	3		0	0		0	1		0	0	5	.24	0	9,799
Adams	0	0		0	0		0	0		0	2		0	0	2	.10	0	3,919
Middle	0	0		0	3		0	1		0	0		0	0	4	.19	0	7,839
Bagley	0	0		0	5		0	0		0	0		0	0	5	.24	0	9,799
Park	0	2		0	2		0	0		0	0		0	0	4	.19	0	7,839
Wash'gt'n Blvd.	0	15		0	7		0	0		0	4		0	0	26	1.24	0	50,978
Griswold	0	0		0	8		0	0		0	1		0	0	9	.43	0	17,633
Grand River	3	14		2	34		0	0		0	2		5	.24	50	2.38	9,799	98,488

WEST WARREN LINE—EASTBOUND—Continued

State-Shelby	3	13		0	26		0	2		1	13		4	.19	54	2.57	7,839	106,254
Michigan	7	6		2	16		0	4		0	11		9	.43	37	1.76	17,633	72,483
Lafayette Blvd.	2	2		0	15		1	1		1	3		4	.19	21	1.00	7,839	40,161
Fort	2	7		1	8		4	3		0	2		7	.33	20	.95	13,746	39,188
Congress	0	5		0	5		5	0		0	0		5	.24	10	.48	9,799	19,593
Larned	0	1		0	3		3	1		0	2		3	.14	7	.33	5,878	13,716
Jefferson	0	11		1	1		7	0		1	4		9	.43	16	.76	17,633	31,348
Griswold	0	0		1	5		0	0		0	0		1	.05	5	.24	1,959	9,799
Woodbridge	0	2		0	1		0	0		0	0		0	0	3	.14	0	5,878
Woodward	0	2		0	2		3	1		1	4		4	.19	9	.43	7 839	17,633
Bates	0	6		0	18		5	0		0	1		5	.24	25	1.19	9,799	48,956
Left on car	0	0		0	0		0	26		0	2		0	0	28	1.39	0	54,816
Totals			35.67			35.12			34.67			35.28	531		531		1,040,500	1,040,500

Summary of traffic count

	First Period	Second Period	Third Period	Fourth Period	TOTAL
No. of cars scheduled	10	34	13	17	74
No. of cars observed	3	8	3	7	21
Per cent. of scheduled cars observed	30.0	23.5	23.1	41.2	28.4

APPENDIX D

OPERATING STATISTICS, D. U. R., 1904-1914 INCLUSIVE

The following tables give the operating statistics of the Detroit United Railway divided into individual lines.

Under the heading "Passengers" are given two columns. The first column marked "Total" gives the total number of passengers carried, including all classes of fares, transfers and free transportation by pass. The column marked "Revenue" gives the number of passengers from whom some form of ticket or cash was received.

The column "Car miles" gives the number of car miles operated for the year in question upon each of the lines.

The column headed "Car hours" gives the car hours for each line.

This information was supplied by the Detroit United Railway for the period 1904 to 1914 inclusive.

OPERATING STATISTICS OF THE DETROIT UNITED RAILWAY

1904

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	7,412,317	5,543,852	1,336,718	115,187
Brush	3,551,862	2,321,660	480,647	52,421
Crosstown	6,669,893	3,910,704	1,086,277	81,484
Fort	9,574,416	6,952,659	1,853,068	175,700
Fourteenth	14,591,705	11,080,973	2,020,519	201,587
Third (Hamilton)	4,507,999	3,398,781	624,202	67,946
Jefferson	14,368,873	10,616,838	2,420,334	216,865
Michigan	13,634,582	10,277,941	1,996,388	193,680
Sherman	11,642,229	9,153,214	1,772,307	158,769
South Chene	954,157	509,457	.....	.....
Third St. Depot	379,644	215,997	118,222	13,382
Trumbull	4,855,264	3,703,316	848,299	79,197
Woodward	12,990,027	9,889,492	1,932,297	178,096
Grosse Pt.	804,252	774,336	.....	.....
Total	105,641,220	78,349,220	16,489,278	1,534,314

1905

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	8,193,160	6,090,601	1,377,739	121,175
Brush	3,651,045	2,600,977	501,067	58,454
Crosstown	8,186,500	4,812,068	1,282,956	100,081
Fort	11,289,719	8,290,260	1,984,347	187,523
Fourteenth	15,540,567	11,711,808	2,067,807	210,755
Third (Hamilton)	4,743,230	3,537,088	612,568	68,195
Jefferson	16,043,007	11,798,854	2,543,236	226,580
Michigan	15,642,435	11,701,134	2,198,236	217,989
Sherman	12,915,061	10,074,248	1,986,961	177,297
Springwells	.....	.....	.....	.....
South Chene	1,062,553	577,590	.....	.....
Third St. Depot	382,400	210,074	114,357	13,675
Trumbull	5,401,953	4,109,469	876,571	84,189
Woodward	15,194,588	11,456,899	2,148,863	202,947
Grosse Pt.	797,684	784,944	.....	.....
Total	119,043,902	87,756,014	17,694,708	1,668,860

OPERATING STATISTICS OF THE DETROIT UNITED RAILWAY

1906

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	9,347,667	6,915,982	1,461,601	117,065
Brush	4,211,385	2,984,443	529,338	60,842
Crosstown	10,056,628	5,864,411	1,395,576	100,205
Fort	12,672,474	9,254,437	2,195,314	192,080
Fourteenth	16,943,876	12,646,363	2,184,284	205,421
Third (Hamilton)	5,417,745	4,034,119	648,840	66,323
Jefferson	17,915,853	13,128,352	2,713,338	225,306
Michigan	17,869,627	13,240,761	2,385,139	211,446
Sherman	14,557,904	11,305,540	2,191,015	181,161
South Chene	1,222,213	673,690	.....	.....
Third St. Depot	420,218	225,430	111,493	12,601
Trumbull	6,261,337	4,725,439	918,019	83,059
Grosse Pt.	838,979	812,236	.....	.....
Woodward	17,478,688	13,053,084	2,387,813	207,655
Gratiot	468,363	401,831	.....	.....
Total	135,682,957	99,266,118	19,121,770	1,663,164

1907

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	9,964,150	7,354,818	1,592,186	145,921
Brush	4,397,631	3,100,770	546,715	64,574
Crosstown	11,161,595	6,488,419	1,538,454	116,765
Fort	13,655,747	9,901,115	2,352,358	230,253
Fourteenth	18,241,964	13,591,290	2,495,736	250,470
Third (Hamilton)	5,861,910	4,346,627	714,425	80,640
Jefferson	19,239,349	14,050,996	2,830,673	258,767
Michigan	20,061,151	14,826,873	2,748,593	269,953
Sherman	16,441,930	12,693,957	2,525,828	225,481
South Chene	1,262,415	686,759	.....	20,310
Third St. Depot	406,007	215,434	113,499	13,764
Trumbull	6,682,904	4,995,639	990,060	98,448
Grosse Pt.	930,173	917,837	.....	.....
Woodward	19,789,439	14,729,996	2,713,695	257,700
Gratiot	949,438	814,887	.....	.....
Total	149,045,803	108,715,417	21,162,222	2,094,419

OPERATING STATISTICS OF THE DETROIT UNITED RAILWAY

1908

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	9,213,990	6,775,412	1,476,375	133,601
Brush	3,827,819	2,705,898	518,067	62,521
Crosstown	11,876,230	6,878,479	1,644,565	124,344
Fort	12,874,994	9,305,124	2,196,158	206,414
Fourteenth	19,651,849	14,679,266	2,700,735	242,585
Third (Hamilton)	5,564,828	4,125,764	658,127	74,223
Jefferson	18,119,424	13,132,426	2,621,626	239,172
Michigan	19,949,297	14,797,936	2,673,504	261,928
Sherman	17,075,882	13,077,480	2,571,643	225,782
South Chene	1,199,990	645,464	.....	.....
Third Street Depot	363,480	189,407	110,641	13,955
Trumbull	6,411,902	4,758,660	915,465	92,228
Woodward	21,022,732	15,778,425	2,801,480	255,527
Gratiot	818,987	689,523	.....	.....
Grosse Pt.	869,431	854,238	.....	.....
Totals	148,840,835	108,393,502	20,888,386	1,932,280

1909

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	10,312,587	7,609,685	1,577,525	145,391
Brush	4,358,732	3,096,709	540,010	66,953
Crosstown	14,675,578	8,534,417	2,003,667	151,174
Fort	14,527,516	10,521,741	2,311,018	225,488
Fourteenth	22,412,593	16,768,459	2,994,798	280,708
Third (Hamilton)	5,856,687	4,359,850	676,692	75,735
Jefferson	19,506,446	14,211,862	2,721,421	248,550
Michigan	22,642,642	16,815,003	2,944,764	299,049
Sherman	18,948,975	14,509,363	2,845,548	255,891
South Chene	1,302,624	709,189	.....	21,998
Third Street Depot	355,890	183,988	114,537	13,968
Trumbull	6,915,202	5,095,901	943,769	95,259
Woodward	24,355,474	18,222,448	3,173,130	298,802
Gratiot	849,814	717,218	.....	.....
Grosse Pt.	944,926	930,076	.....	13,964
Totals	167,965,686	122,285,909	22,846,879	2,309,079

OPERATING STATISTICS OF THE DETROIT UNITED RAILWAY

1910

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	11,711,895	8,627,366	1,680,201	162,663
Brush	5,126,171	3,676,202	596,393	72,739
Crosstown	17,375,753	10,151,537	2,265,322	177,307
Fort	17,269,577	12,462,471	2,567,030	250,023
Fourteenth	24,813,141	18,533,312	3,474,424	335,694
Third (Hamilton)	6,681,273	4,978,860	713,738	83,992
Jefferson	22,813,914	16,660,726	3,243,852	310,960
Michigan	26,627,206	19,673,209	3,297,135	342,321
Sherman	20,418,614	15,657,442	2,999,753	277,457
South Chene	1,375,674	741,036	.....	21,548
Third Street Depot	366,274	191,235	114,855	14,035
Trumbull	7,780,073	5,720,648	1,041,625	109,011
Woodward	30,090,172	22,816,090	3,834,375	385,453
Gratiot	821,505	694,056	.....	.....
Grosse Pt.	1,117,263	1,106,335	.....	14,821
Totals	194,388,505	141,690,525	25,828,703	2,682,436

1911

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	13,089,118	9,506,896	1,728,498	174,970
Brush	5,404,857	3,840,927	604,188	74,119
Crosstown	17,981,059	10,520,611	2,229,902	199,376
Fort	18,790,577	13,508,588	2,597,424	250,985
Fourteenth	26,100,571	19,486,464	3,443,487	332,435
Third (Hamilton)	7,407,580	5,580,228	750,795	90,745
Harper	2,218,378	1,229,913	212,380	50,066
Jefferson	25,231,624	18,581,224	3,368,920	334,967
Michigan	29,946,991	22,181,845	3,479,191	365,486
Sherman	21,178,648	16,303,119	3,008,411	285,594
Springwells	369,050	209,163	108,597	26,047
South Chene	1,460,714	742,131	81,601	21,867
Third Street Depot	356,393	184,689	114,583	13,954
Trumbull	8,451,801	6,148,910	1,096,338	114,675
Victor	155,189	75,508	21,660	6,676
Warren	1,217,273	891,793	143,447	39,805
Woodward	34,037,606	25,918,972	4,277,791	418,271
Gratiot	278,263	231,319	.....	.....
Grosse Pt.	1,342,875	1,329,714	.....	24,245
Totals	215,018,567	156,472,014	27,446,719	2,824,283

OPERATING STATISTICS OF THE DETROIT UNITED RAILWAY

1912

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	15,896,002	11,485,946	1,845,860	199,511
Brush	5,979,319	4,274,116	611,713	77,879
Crosstown	18,806,276	10,996,470	2,286,936	247,758
Fort	21,127,308	15,235,094	2,700,581	266,743
Fourteenth	27,903,908	20,863,845	3,463,665	366,957
Third (Hamilton)	8,905,057	6,739,644	973,144	113,770
Harper	4,792,990	2,687,656	523,356	57,938
Jefferson	28,272,169	21,129,145	3,464,937	371,159
Michigan	35,236,873	26,362,328	3,908,759	422,092
Myrtle	4,674,387	3,357,803	679,764	75,753
Sherman	22,400,309	17,304,320	2,983,955	316,078
Springwells	888,491	521,435	263,216	27,364
South Chene	1,556,883	790,459	201,370	22,839
Third Street Depot	388,889	207,607	115,157	14,026
Trumbull	6,379,481	4,551,561	786,550	93,599
Victor	380,099	197,562	62,893	7,001
Warren	2,388,826	1,755,546	349,886	40,410
Woodward	38,854,855	29,833,895	4,907,616	492,428
Grosse Pt.	1,280,725	1,273,022	447,732	28,165
Total	246,112,847	179,566,871	30,577,090	3,241,470

1913

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	19,800,800	14,220,769	2,031,145	222,903
Brush	6,410,136	4,626,335	623,754	79,802
Crosstown	24,621,374	13,883,460	2,565,829	286,045
Fort	24,847,607	17,972,132	2,831,650	288,649
Fourteenth	30,905,907	22,348,727	3,902,440	416,828
Third (Hamilton)	12,028,286	8,986,194	1,499,400	162,047
Harper	7,941,159	5,589,944	1,112,633	128,684
Jefferson	33,344,716	24,612,438	3,827,285	403,118
Michigan	42,740,114	31,990,364	4,489,663	494,113
Myrtle	6,825,855	4,930,430	872,755	94,386
Michigan Depot	36,487	29,004	3,866	516
Sherman	20,136,117	15,628,985	2,833,650	310,088
Springwells	1,155,163	693,917	246,615	27,530
South Chene	1,654,155	836,015	199,860	22,624
Third Street Depot	462,082	247,920	109,868	14,063
Trumbull	6,095,764	4,280,875	636,144	79,063
Victor	858,783	442,551	96,492	10,811
Warren	2,080,995	1,523,791	347,836	42,433
Woodward	46,074,911	35,002,381	5,389,359	561,562
Grosse Pt.	1,109,805	1,099,116	362,939	26,629
Totals	289,130,216	208,945,348	33,983,183	3,671,894

OPERATING STATISTICS OF THE DETROIT UNITED RAILWAY

1914

Name of Line	PASSENGERS		Car Miles	Car Hours
	Total	Revenue		
Baker	23,330,757	16,970,463	2,099,515	235,923
Brush	6,778,476	4,907,370	624,014	80,258
Crosstown	28,460,966	13,205,513	2,598,452	288,811
Fort	25,316,295	18,528,025	2,760,304	287,565
Fourteenth	31,697,638	22,321,248	3,795,046	403,898
Hamilton	13,174,280	9,923,644	1,500,427	163,896
Harper	8,927,290	6,271,120	1,039,607	125,473
Jefferson	37,036,773	27,023,347	3,760,221	406,936
Michigan	46,484,661	34,779,803	4,533,442	509,802
Myrtle	7,097,619	5,322,269	830,290	95,664
Michigan Depot	2,282,584	1,768,340	269,298	36,694
Sherman	17,114,209	13,052,503	2,197,304	239,362
Springwells	1,397,134	865,406	263,064	28,145
South Chene	1,608,692	819,573	202,323	22,777
Third Street Depot	413,401	227,874	101,816	14,192
Trumbull	6,654,871	4,697,734	594,032	72,462
Victor	1,212,461	590,884	120,787	12,374
Warren	1,915,640	1,336,378	361,017	42,231
Woodward	47,457,294	35,573,351	4,780,243	507,022
Grand Belt	518,813	311,227	62,585	6,883
Grosse Pt.	1,121,250	1,106,984	200,611	14,125
Totals	310,010,104	219,606,056	32,694,398	3,594,493

APPENDIX E

INCREASE IN VALUATION DUE TO RAPID TRANSIT

Philadelphia:

The effect on assessed valuations of real estate in the business district of Philadelphia by reason of the building of the Market Street subway has been marked. In the report of the Transit Commission of the City of Philadelphia is given comparative statistics by years showing how Market Street property (land value only) has increased four and five times as fast in the same period as on other adjacent streets which are without rapid transit.

Assessed Valuations of Property on Principal Delivery District Streets Prior and Subsequent to the Construction of the Market Street Subway Line

	Property Between 13th Street and Delaware River Fronting on		
Increase (per cent.) of	Market Street	Arch Street	Chestnut Street
1906 over 1900	58.4	11.1	20.1
1912 over 1906	43.7	24.8	4.6
1912 over 1900	127.6	38.7	25.7

The Market Street subway began operation in August, 1908. As shown above for the 12-year period, the Market Street valuation increased 128%, while during the same period similar real estate on Chestnut Street increased only 26%, and on Arch Street increased only 39%. It is stated that this difference is largely due to construction of the Market Street subway. These figures show that there is no deterioration in values of adjacent property due to subway lines.

INCREASE IN VALUATIONS OF OUTLYING UNIMPROVED REAL ESTATE DUE TO RAPID TRANSIT

Philadelphia:

The effect on the valuation of land in the 46th Ward of Philadelphia due to the construction of the Market Street subway, as given in the report of the Transit Commission of the city of Philadelphia for a 12-year period, shows 546% increase and over 130% increase in a 6-year period. This shows the enormous enhancement of value of land in outlying districts due to improved rapid transit.

New York:

From an investigation made by the City Club of New York in 1908, the benefits of rapid transit on land values, is strikingly demonstrated. In that part of Manhattan north of 125th Street, which is now served by the subway, the increase in assessed valuation of 1907 over 1900 was 104%, which is

apparently due to the construction of rapid transit facilities. Similarly in the Bronx the abnormal increase in the same 7-year period, due to the building of the subway, was $31,300,000, or a total abnormal increase of $80,500,000 in a section served by the new rapid transit system. This abnormal increase in valuation is stated to be about 6 times the cost of construction through the district.

Chicago:

The increase in unimproved land valuations due to the building of rapid transit lines into sections which previously had no transportation service is more clearly shown in Chicago from statistics which we have gathered from the public records as follows:

Assessed Valuations of Unimproved Lots in Outlying Districts Served by Elevated Lines

Locations	1894	1904	Percent Increase	1914	Percent Increase
North Sawyer line	$295	$780	164	$1300	66
Logan Boulevard	355	2250	534	2500	11
Douglas Boulevard	590	875	48	1125	29
Ogden Avenue	820	875	6	1000	14
Sheridan Drive	765	3150	312	5000	58
Sheridan Drive	885	7000	690	10500	50
Barry Point Road	825	2300	180	2250	–2
Garfield Boulevard	825	1495	82	2000	34
Garfield Boulevard	1060	2100	98	2500	19
59th Street South Side	885	1500	70	2000	33
56th Street South Side	1770	3250	83	3750	15
53rd Street South Side	1680	3500	108	3600	2
53rd Street South Side	975	1575	62	2000	27

In the 10-year period, between 1894 and 1904, the tremendous increase of assessed valuations shows from one to nearly 6 times, due to the building of elevated lines, the increase for the following 10-year period being considerably less. This table shows that real estate which was of nominal value and which in a number of places was assessed as acreage before being made accessible by rapid transit has obtained enormous increases. Additional territory has been made tributary to the city, density of population relieved and citizens are permitted to build detached houses within an extended time zone of transportation to the business center.

APPENDIX F

In addition to the track changes required for the rerouting within the congested district, and which are shown on MAP 7, there are certain new sections, curves and turnouts required, which are given in the following list:

NEW TRACK

Double track in Park from Columbia to Bagg.
Curve from new north bound track in Park running west in Bagg to connection at Clifford with present track in Bagg.
Continuation of new south bound track in Park from Bagg north to Charlotte and in Charlotte west to connection north with present track in Third.
Turnout from present track in Bagg west bound to present track in Greenwood north bound.
Connection from present track in Henry at Clifford east bound in Henry to connection with new south bound track in Park.
Double track in Trumbull from Fort to Michigan, replacing present single track between Michigan and Abbott.
Turnout from present west bound track in Fort to new north bound track in Trumbull.
Turnout from new north bound track in Trumbull to present west bound track in Michigan.
Turnout from present east bound track in Michigan to new south bound track in Trumbull.
Turnout from new south bound track in Trumbull to present east bound track in Fort.
Turnout from present north bound track in Trumbull to present west bound track in Grand River.
Turnout from present track in Larned west bound to present track in Third north bound.
Turnout from present track in Third north bound to present west bound track in Fort.
Continuation of present single track in Farnsworth from St. Antoine to connection with present south bound track in Beaubien.
Continuation of present single track in St. Antoine from Farnsworth to Frederick and eastward in Frederick from St. Antoine to connection northward with present single track in Hastings.

TRACK NOT USED

Double track in Clifford from Columbia to Henry.
Single track in Clifford from Henry to Bagg.
Two turnouts at Clifford and Henry.
Turnout at Clifford and Bagg.
Single track in Cass from Columbia to Ledyard and in Ledyard to Third.
Single track in Third from Henry to Charlotte.
Two turnouts at Ledyard and Third.

APPENDIX G

ESTIMATE OF COST OF REROUTING AND EXTENSIONS, INCLUDING PROPOSED TRACK AND PAVING CONSTRUCTION IN THE CITY OF DETROIT

Track changes for rerouting of surface car lines, including new construction, necessary removals, paving, overhead construction and widening of Park Boulevard, complete as shown on MAP 7 and in Appendix F		$400,000
Extensions of lines as recommended for immediate construction and shown on MAP 2, complete, including paving and overhead construction:		
1. Grand Belt from Warren to Harper via McGraw, 12th, Marquette, Lincoln, Baltimore, Milwaukee, Brush and Conant	$423,000	
2. Forest, from Mt. Elliott to Cadillac	137,000	
3. Fourteenth, from Ferry Park to Nicolet	45,500	
4. Warren, from 34th to D. T. Railroad	22,500	628,000
Total cost		$1,028,000

The extension on Cadillac Avenue from Harper to Jefferson is not included, as it is not recommended for immediate construction.
The extension over the Belle Isle bridge from Jefferson Avenue to the island will be included in future estimates.

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PART IV

MAPS, PLANS AND DIAGRAMS

REDUCTION RATIO 17:1

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PM-MGP 13"x18"
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PRECISION℠ RESOLUTION TARGETS

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MAP 1

DETROIT & SUBURBS
PRESENT STREET RAILWAY SYSTEM

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

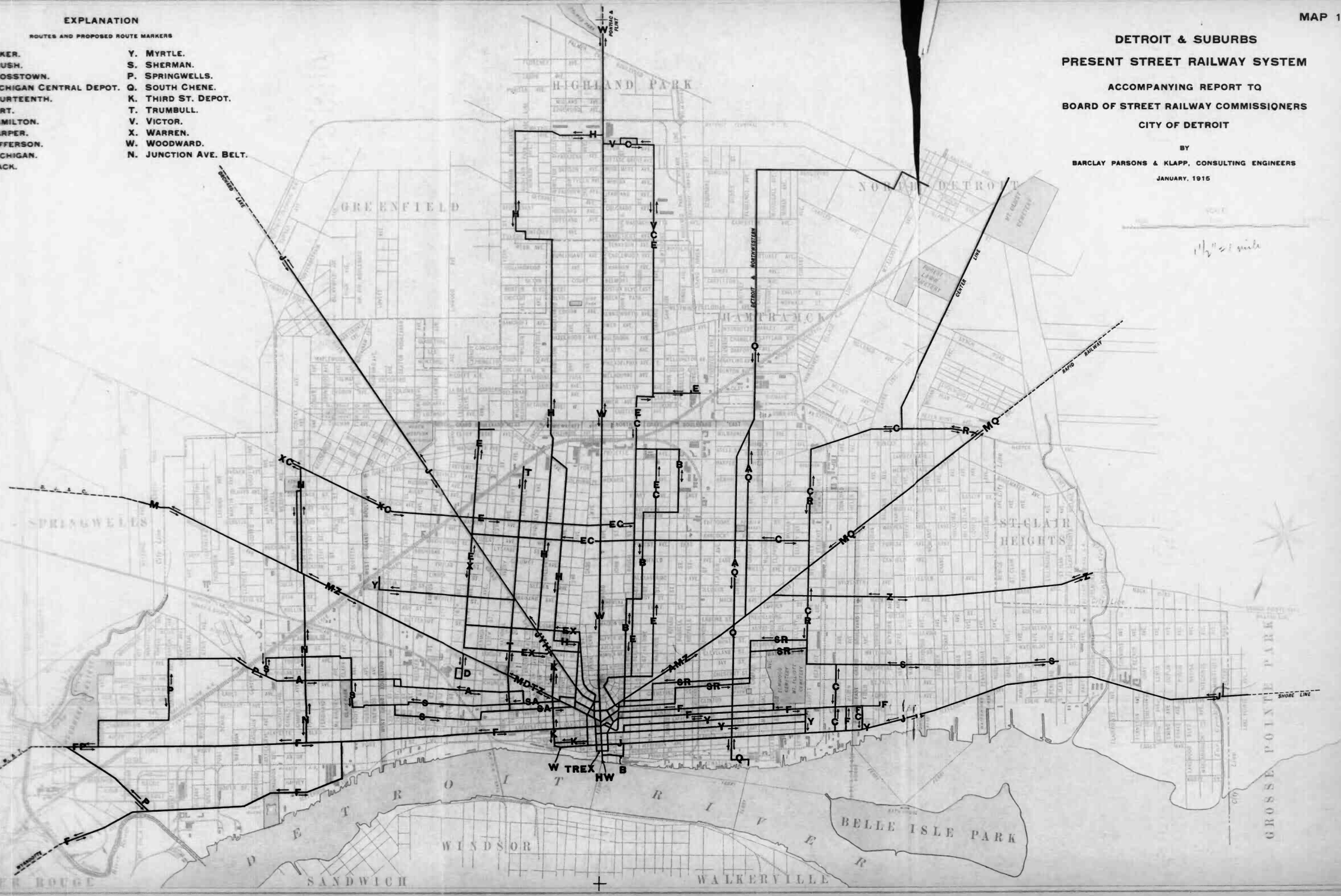
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

1½" = 1 mile

EXPLANATION

ROUTES AND PROPOSED ROUTE MARKERS

A. Baker.
B. Brush.
C. Crosstown.
D. Michigan Central Depot.
E. Fourteenth.
F. Fort.
H. Hamilton.
R. Harper.
J. Jefferson.
M. Michigan.
Z. Mack.
Y. Myrtle.
S. Sherman.
P. Springwells.
Q. South Chene.
K. Third St. Depot.
T. Trumbull.
V. Victor.
X. Warren.
W. Woodward.
N. Junction Ave. Belt.



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E. FOURTEENTH.
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H. HAMILTON.
R. HARPER.
J. JEFFERSON.
M. MICHIGAN.
Z. MACK.
Y. MYRTLE.
S. SHERMAN.
P. SPRINGWELLS.
Q. SOUTH CHENE.
K. THIRD ST. DEPOT.
T. TRUMBULL.
V. VICTOR.
X. WARREN.
W. WOODWARD.
N. JUNCTION AVE. BELT.

DETROIT & SUB

PRESENT STREET RAIL

ACCOMPANYING RE

BOARD OF STREET RAILWAY

CITY OF DETRO

BY

BARCLAY PARSONS & KLAPP, CONS

JANUARY, 1915

HIGHLAND PARK
GREENFIELD
HAMTRAMCK
SPRINGWELLS
OAKWOOD
ST. CLAIR HEIGHTS
DETROIT & NORTHWESTERN
GRAND TRUNK WESTERN
CENTER LINE
RAPID RAILWAY

MAP 1

DETROIT & SUBURBS
PRESENT STREET RAILWAY SYSTEM

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

SCALE
1½" = 1 mile

MYRTLE.
HERMAN.
SPRINGWELLS.
SOUTH CHENE.
THIRD ST. DEPOT.
RUMBULL.
VICTOR.
WARREN.
WOODWARD.
JUNCTION AVE. BELT.

HIGHLAND PARK
GREENFIELD
HAMTRAMCK
NORTH DETROIT
ST. CLAIR HEIGHTS
GROSSE POINTE PARK
DETROIT RIVER
MT. OLIVET CEMETERY
FOREST LAWN CEMETERY
DETROIT & NORTHWESTERN
CENTER LINE
RAPID RAILWAY
SHORE LINE
GRAND BOULEVARD
GRAND BOULEVARD EAST
GRAND BOULEVARD WEST
PONTIAC & FLINT

E. FOURTEENTH.
F. FORT.
H. HAMILTON.
R. HARPER.
J. JEFFERSON.
M. MICHIGAN.
Z. MACK.

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N. JUNCTION AVE. BELT.

ACCOMPANYING REP
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CITY OF DETROI
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JANUARY, 1915

GREENFIELD
SPRINGWELLS
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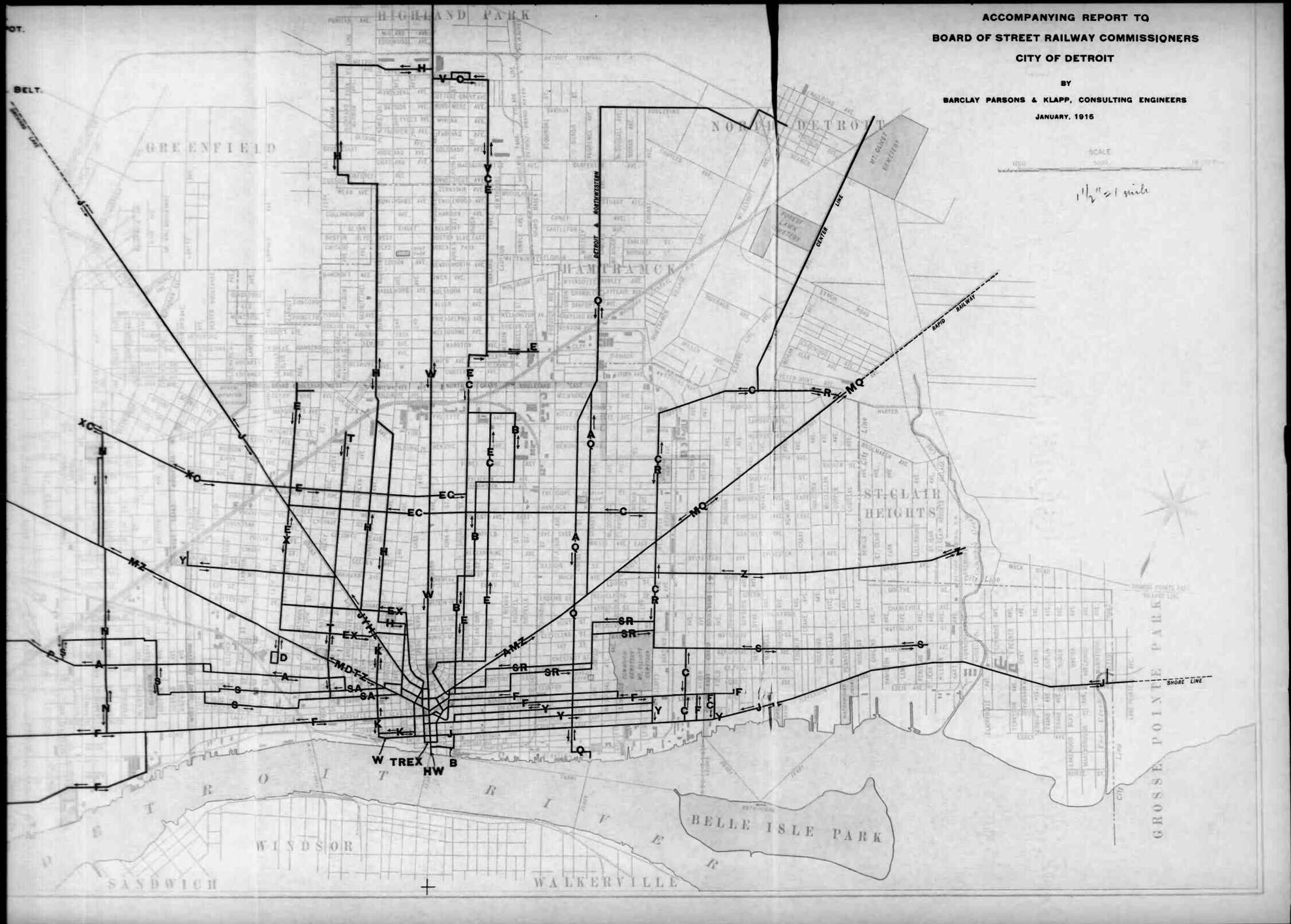
NORTH DETROIT
ST. CLAIR HEIGHTS
OAKWOOD
RIVER ROUGE
SANDWICH
WINDSOR
WALKERVILLE
BELLE ISLE PARK
DETROIT RIVER
GRAND BOULEVARD WEST
NORTH GRAND BOULEVARD EAST
GRAND RIVER
GRATIOT LINE
CENTER LINE
DETROIT & NORTHWESTERN
RAPID RAILWAY
WYANDOTTE
City Limits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HAMTRAMCK
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BELLE ISLE PARK
GROSSE POINTE PARK
WINDSOR
SANDWICH
WALKERVILLE
DETROIT & NORTHWESTERN
CENTER LINE
RAPID RAILWAY
SHORE LINE
MT. OLIVET CEMETERY
FOREST LAWN CEMETERY
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MAP 2

DETROIT AND SUBURBS
REROUTED STREET RAILWAY SYSTEM

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY 1915

EXPLANATION

ROUTES AND PROPOSED ROUTE MARKERS

A. Baker.
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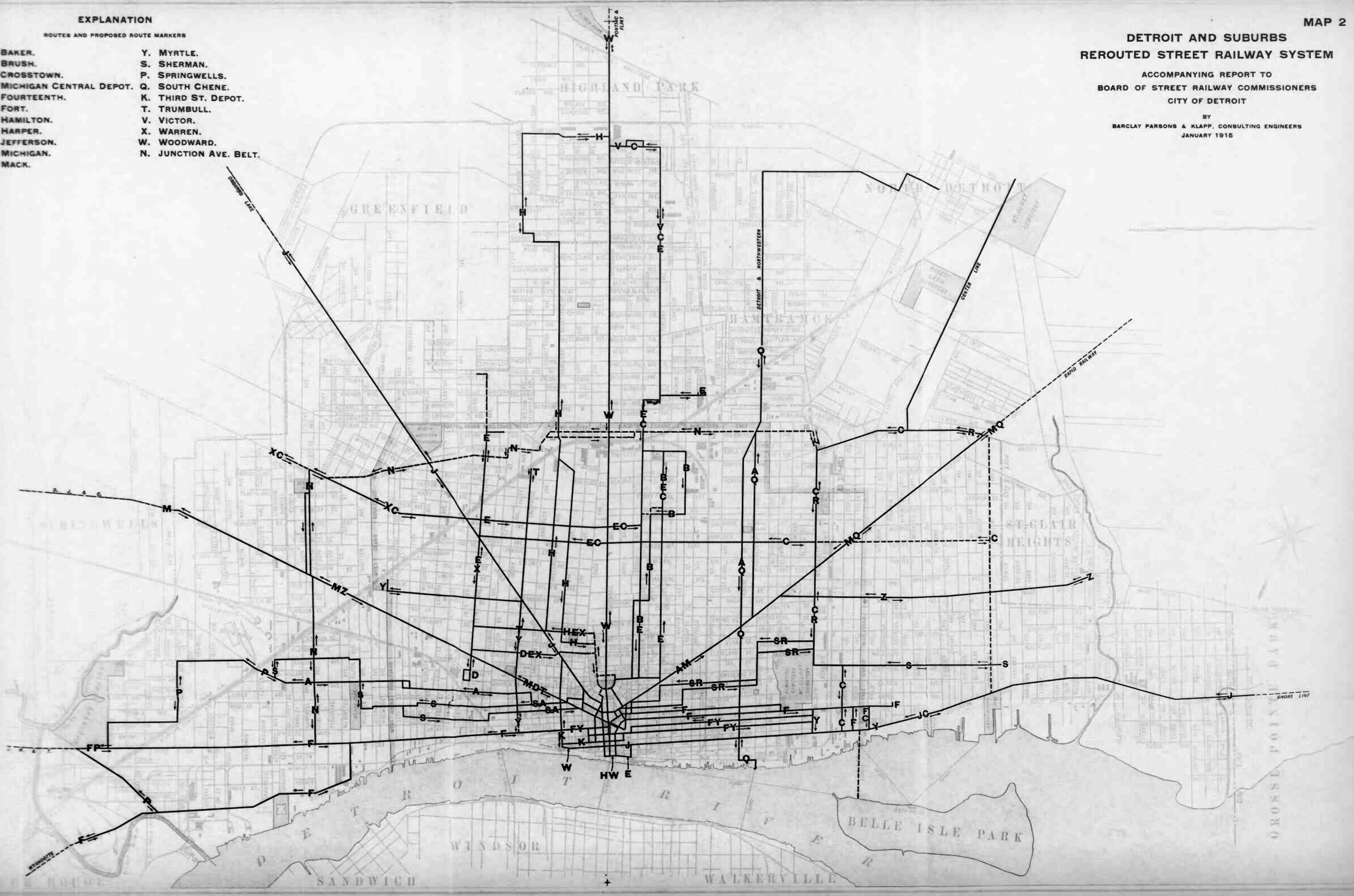
F. Fort.
H. Hamilton.
R. Harper.
J. Jefferson.
M. Michigan.
Z. Mack.
Y. Myrtle.
S. Sherman.
P. Springwells.
Q. South Chene.
K. Third St. Depot.
T. Trumbull.
V. Victor.
X. Warren.
W. Woodward.
N. Junction Ave. Belt.



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PRECISION℠ RESOLUTION TARGETS

Century

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St. Paul, MN 55119

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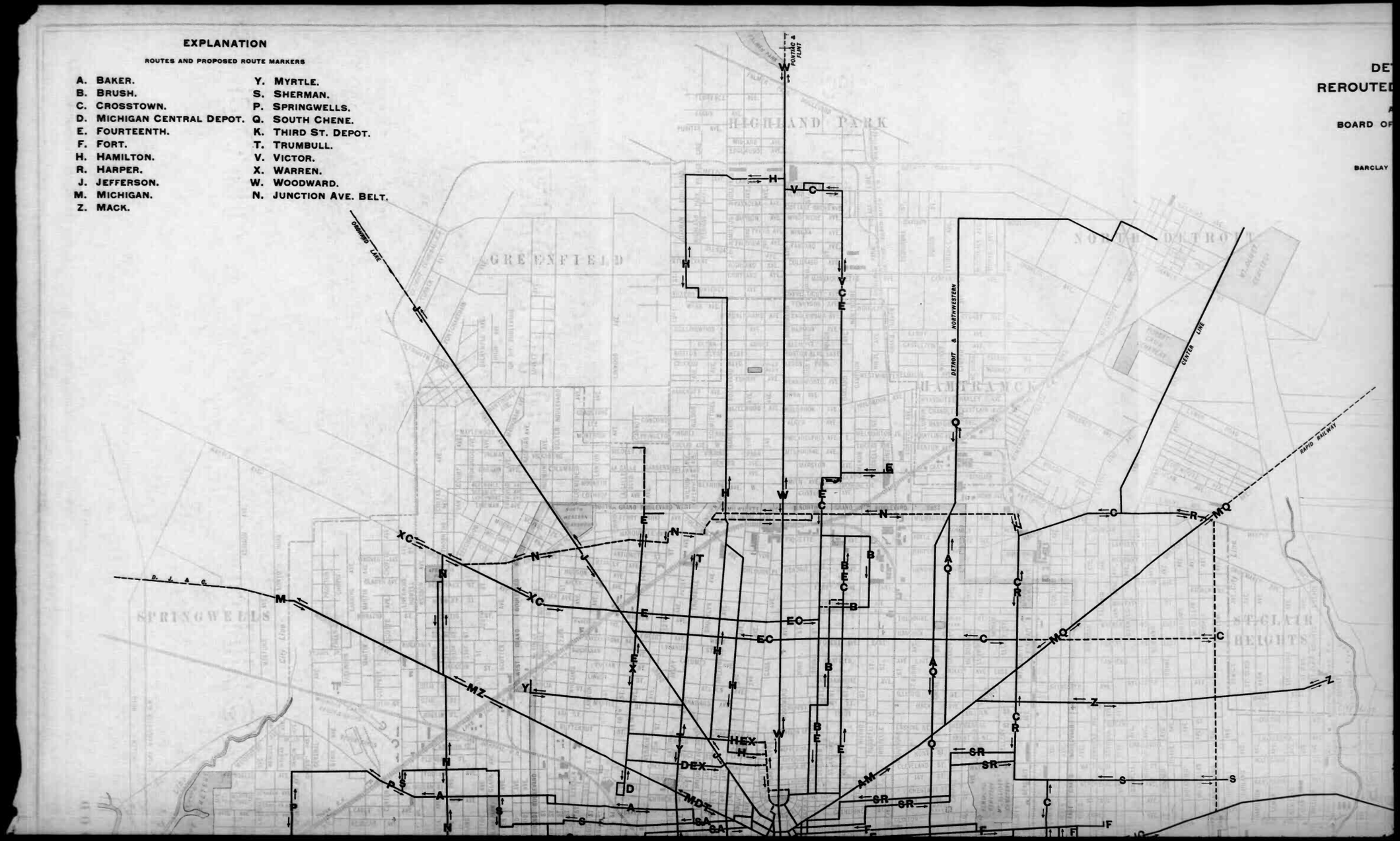
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T. TRUMBULL.
V. VICTOR.
X. WARREN.
W. WOODWARD.
N. JUNCTION AVE. BELT.
DE
REROUTED
BOARD OF
BARCLAY
HIGHLAND PARK
GREENFIELD
SPRINGWELLS
HAMTRAMCK
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GRAND TRUNK
PONTIAC & FLINT
DETROIT & NORTHWESTERN
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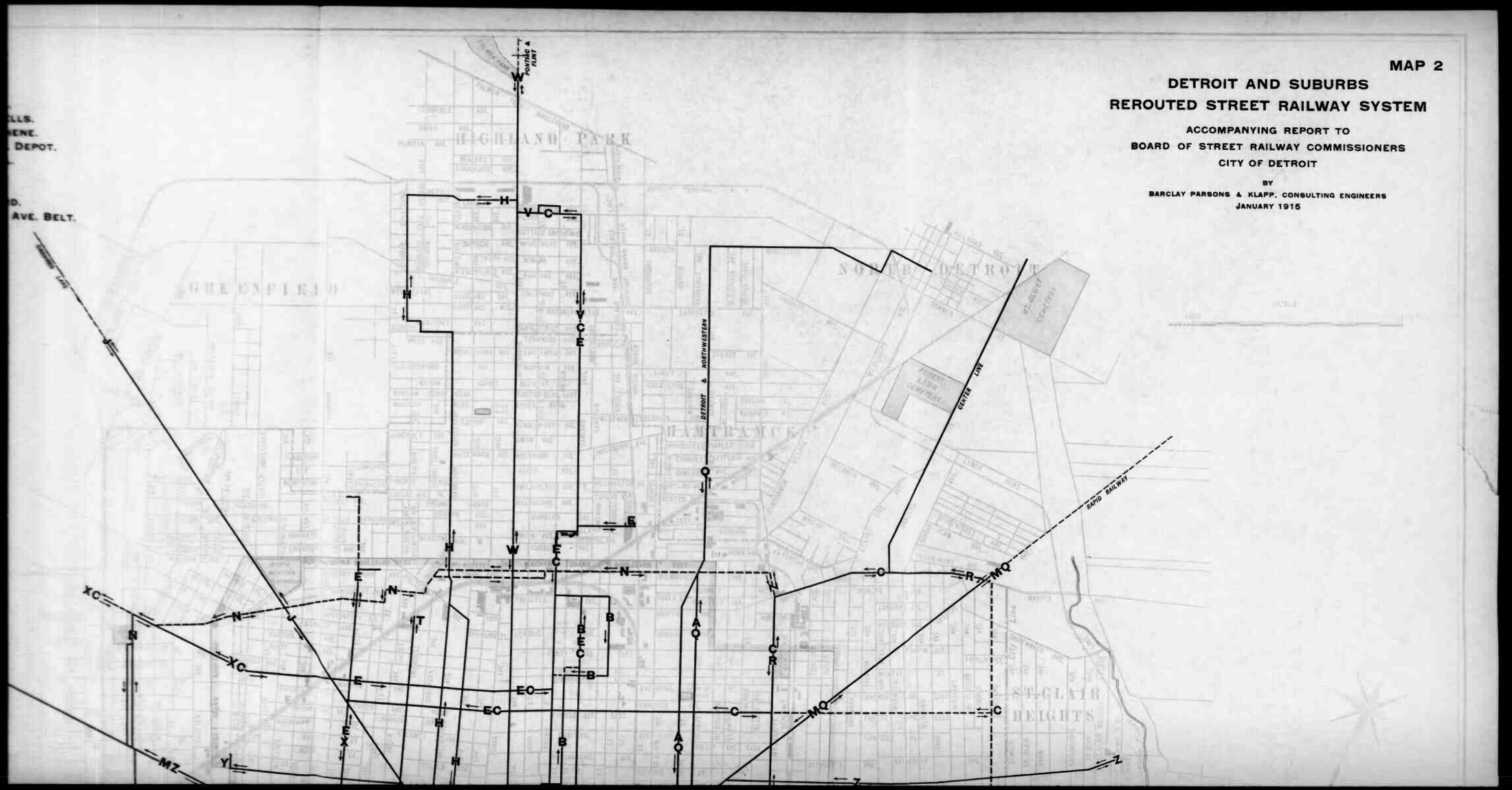
MAP 2
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REROUTED STREET RAILWAY SYSTEM
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
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JANUARY 1915
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GREENFIELD
NORTH DETROIT
HAMTRAMCK
ST. CLAIR HEIGHTS
DETROIT & NORTHWESTERN
CENTER LINE
RAPID RAILWAY
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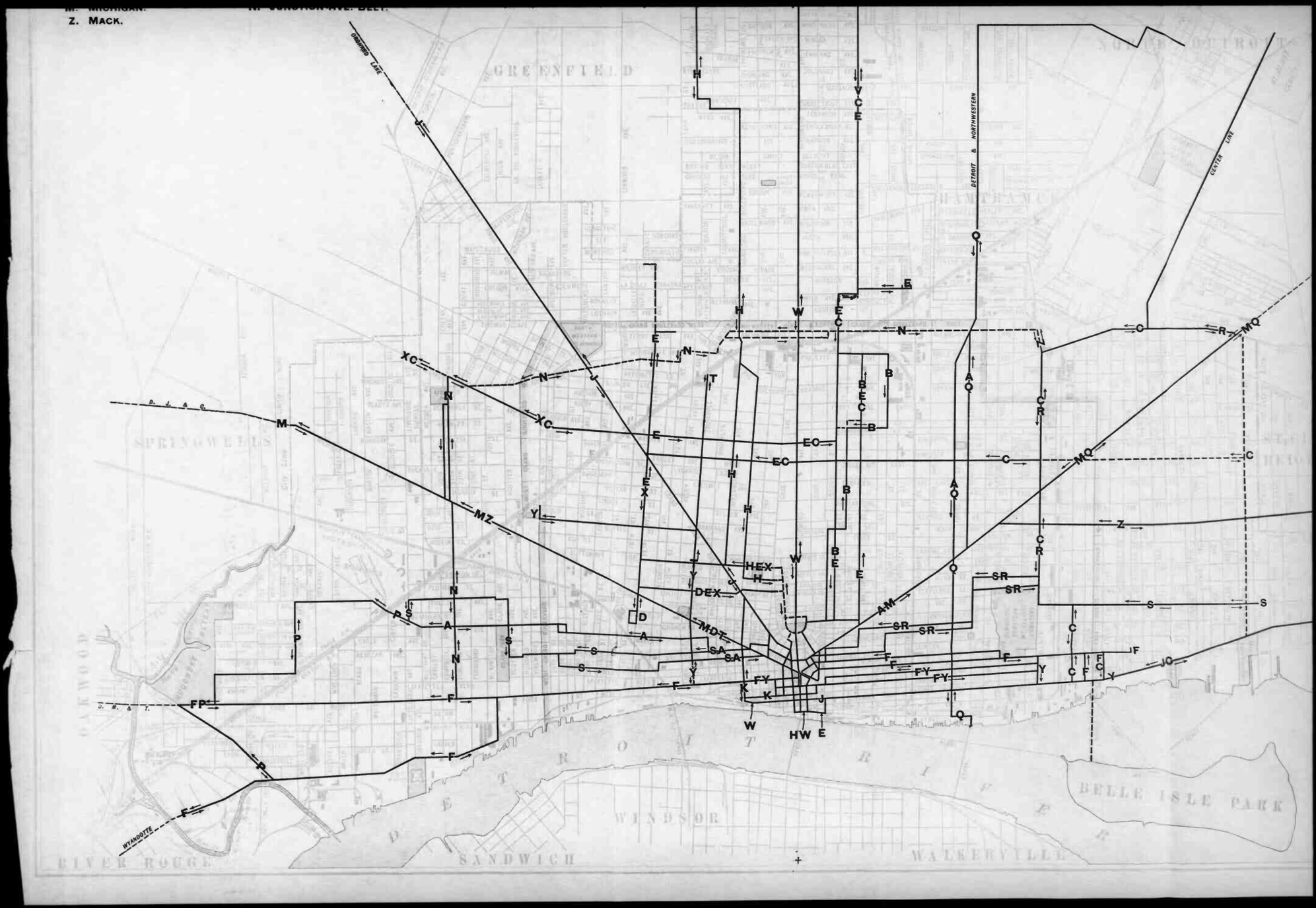
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CENTER LINE
GRAND BELT
GREENFIELD
SPRINGWELLS
HAMTRAMCK
DELRAY
ECORSE
RIVER ROUGE
SANDWICH
WINDSOR
WALKERVILLE
BELLE ISLE PARK
DETROIT RIVER
WYANDOTTE
D. L. & G.
D. M. & T.
XC
MZ
MDT
HEX
DEX
AM
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JC
FP
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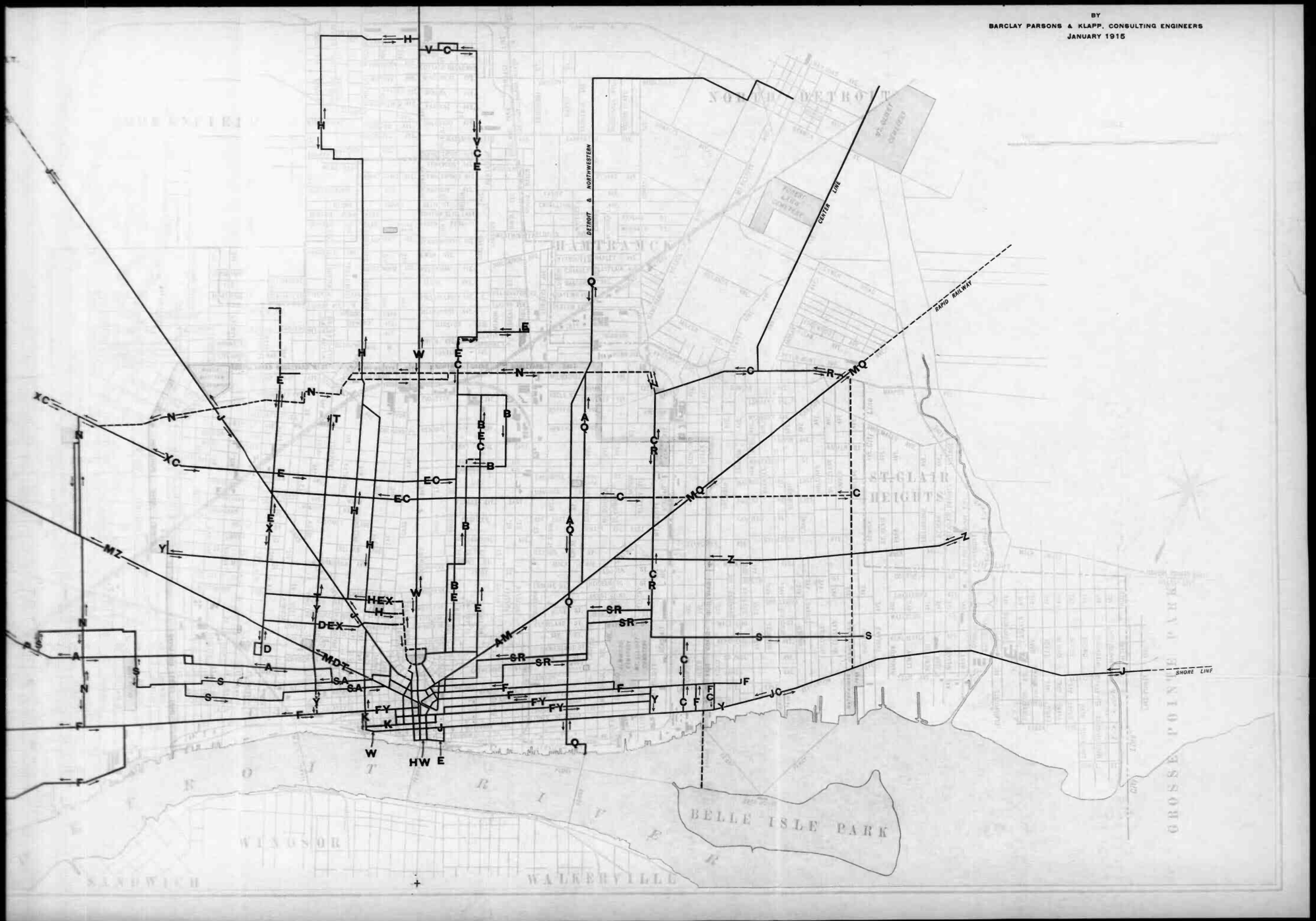
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY 1915



REDUCTION

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PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
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PRECISION℠ RESOLUTION TARGETS

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St. Paul, MN 55119

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EXPLANATION

Resident population distributed by areas 1/2 mile by 1/2 mile (160 acres). Compiled from State and U. S. Census.

Rectangular shaded areas in each 1/2 mile section indicate graphically the population resident in that section for the years 1904-1907-1910-1914, reading from the top down.

The figures in or beside each shaded area give the population for the corresponding year.

MAP 3

DISTRIBUTION OF POPULATION OF DETROIT AND SUBURBS BY DISTRICTS

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

TOTAL POPULATION
1904-394 680
1907-449 138
1910-515 414
1913-614 486

SCALE:
FOR TOTAL POPULATION 0 100,000 200,000 300,000 400,000 500,000
FOR 1/2 MILE SECTIONS 0 10,000 20,000 30,000

HIGHLAND PARK
GREENFIELD
NORTH DETROIT
SPRINGWELLS
ST. CLAIR HEIGHTS
GROSSE POINTE PARK
BELLE ISLE PARK
WINDSOR
SANDWICH
WALKERVILLE
RIVER ROUGE
DETROIT RIVER

REDUCTION RATIO 16:1

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PRECISION℠ RESOLUTION TARGETS

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DISTRIBUTION OF
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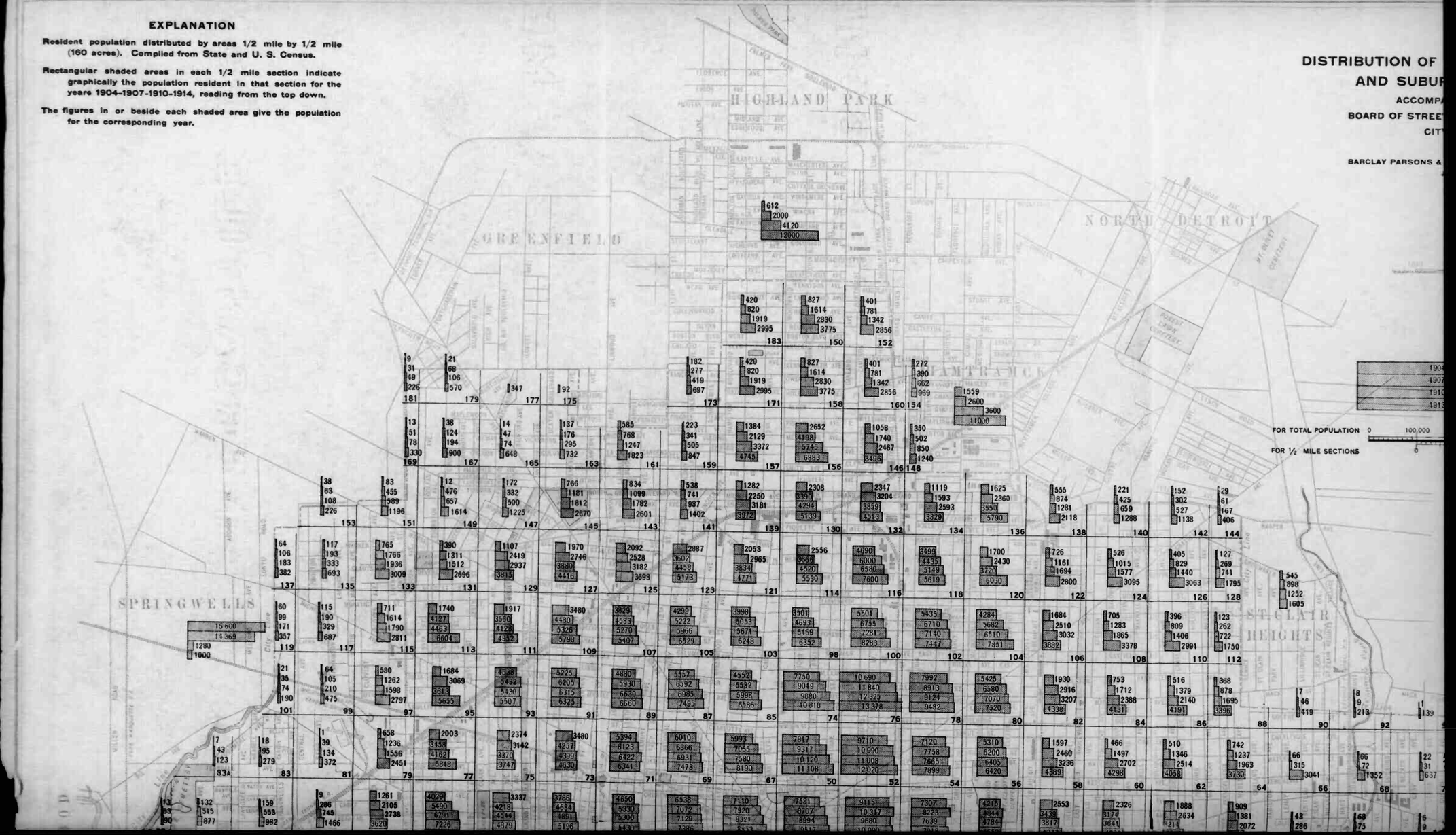
CIT

BARCLAY PARSONS &



MAP 3

DISTRIBUTION OF POPULATION OF DETROIT AND SUBURBS BY DISTRICTS

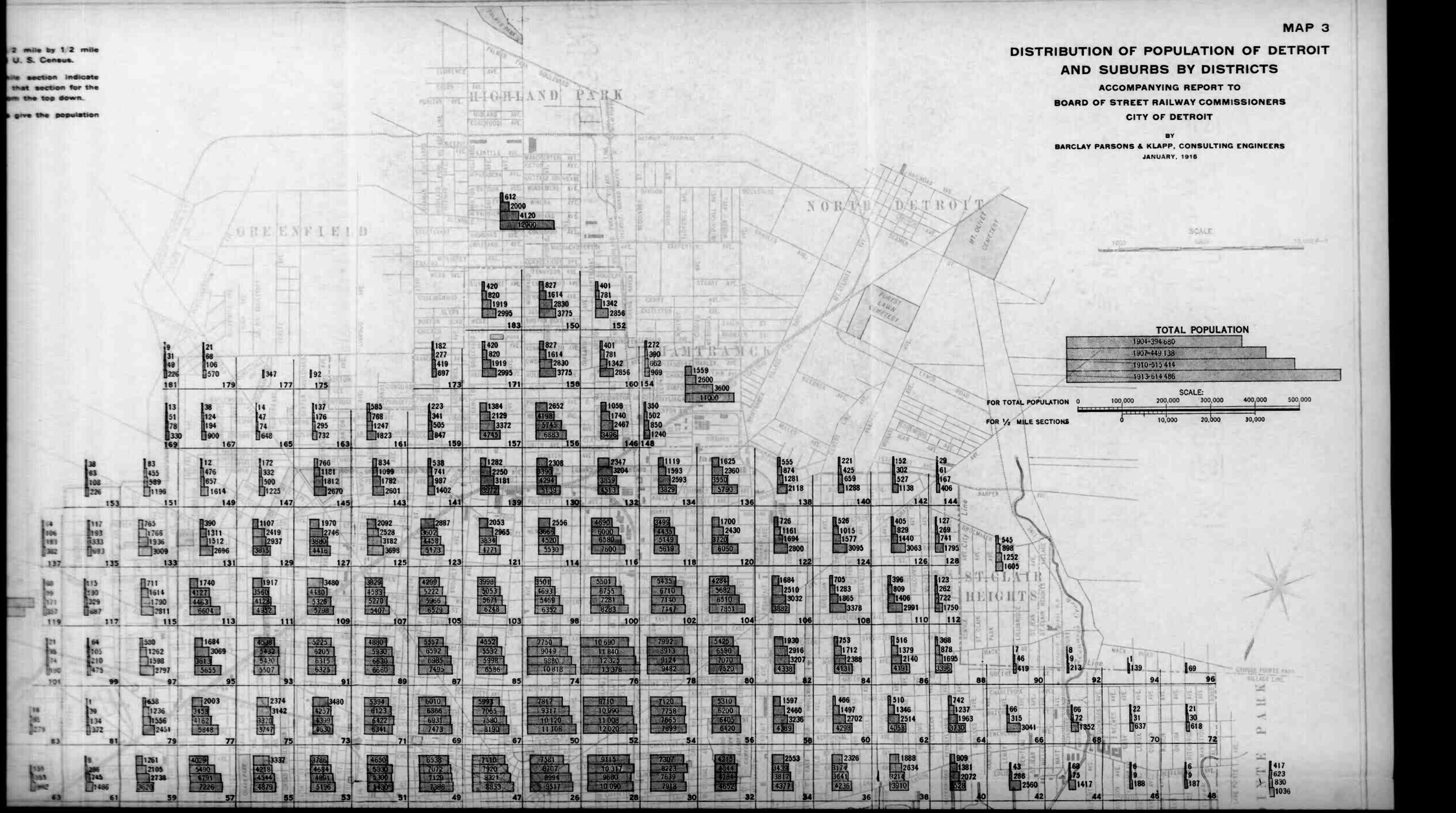
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

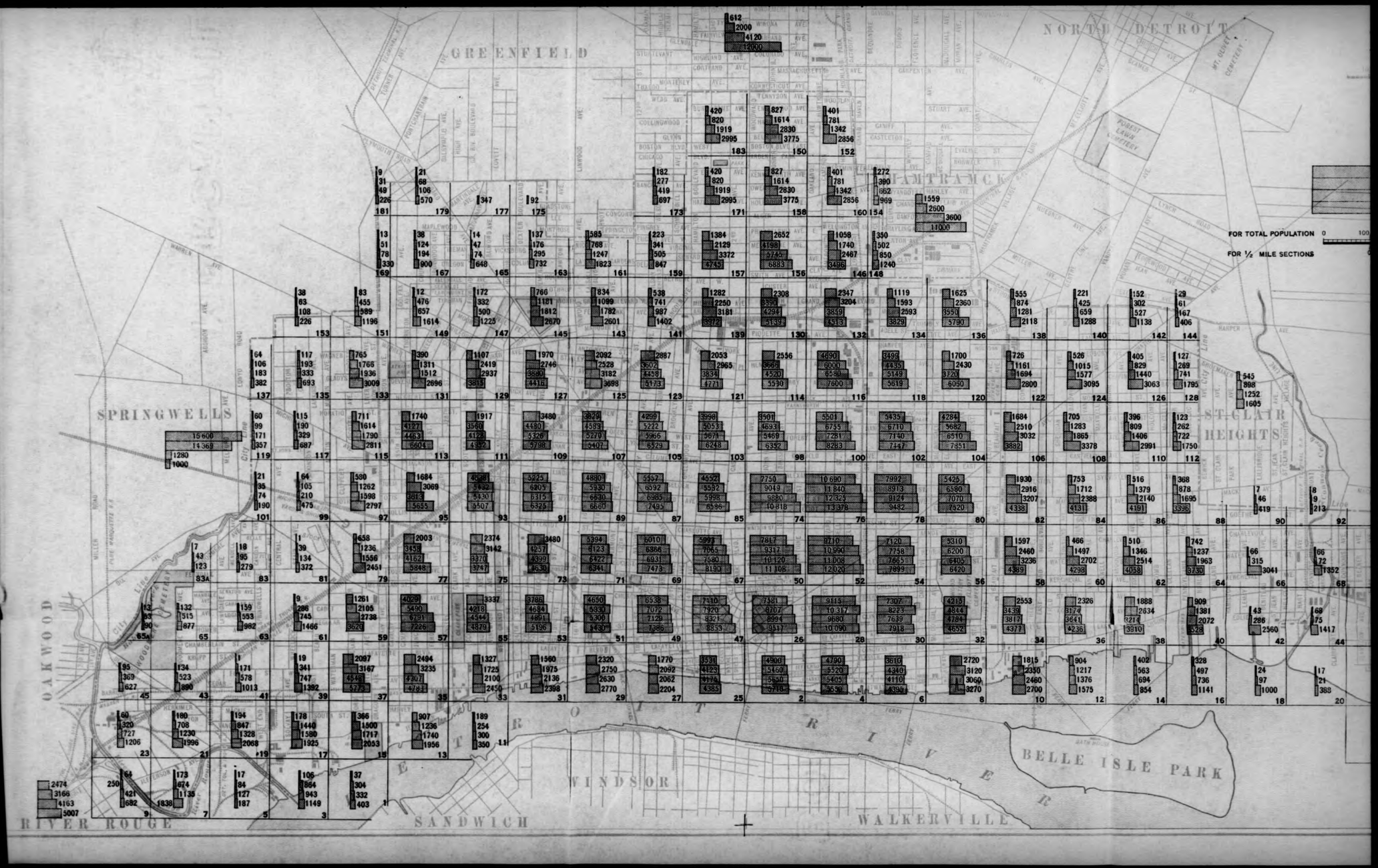
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

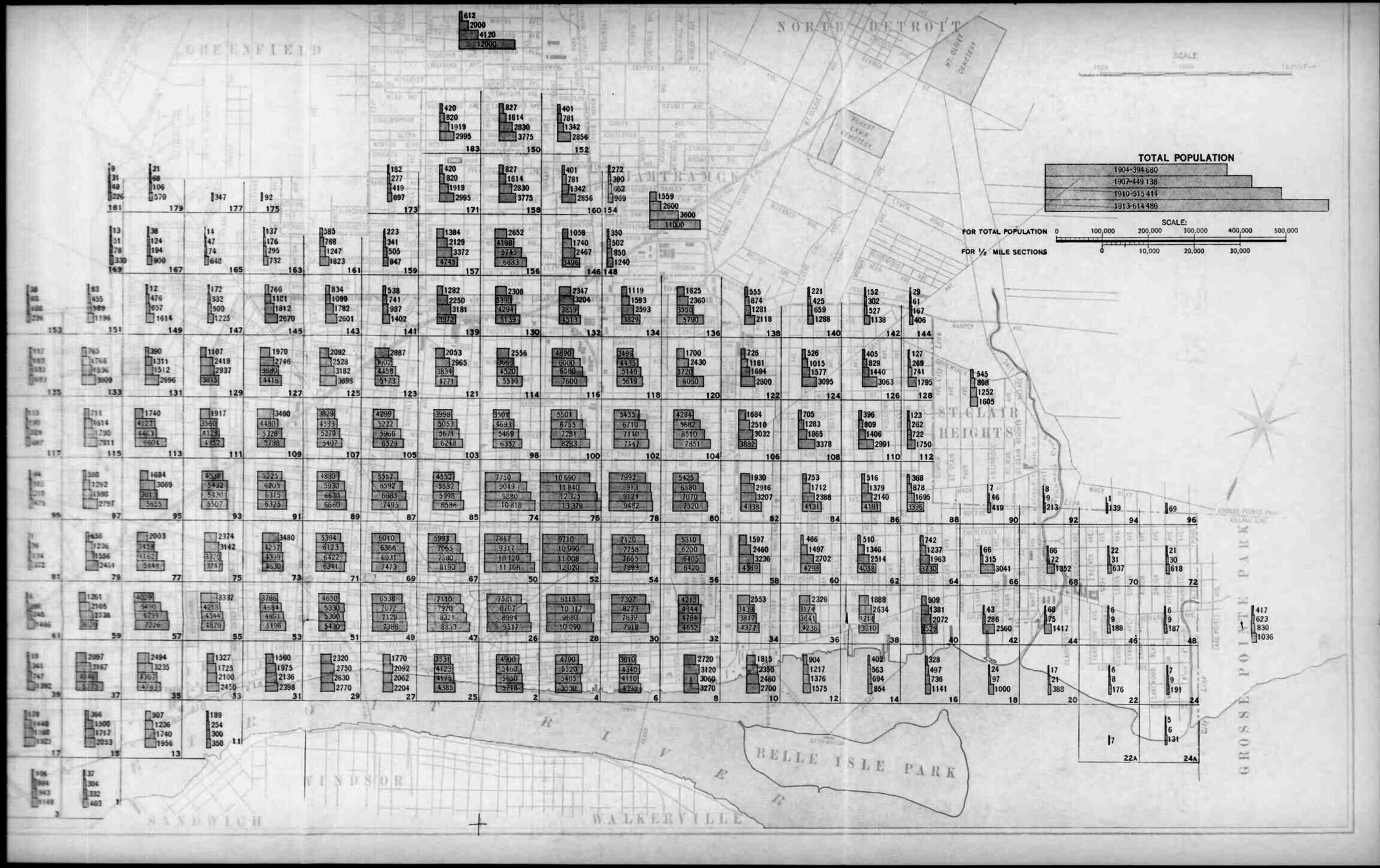
2 mile by 1/2 mile
U. S. Census.

ile section indicate
that section for the
om the top down.

give the population




GREENFIELD
NORTH DETROIT
HAMTRAMCK
SPRINGWELLS
ST. CLAIR HEIGHTS
OAKWOOD
DETROIT RIVER
BELLE ISLE PARK
WINDSOR
SANDWICH
WALKERVILLE
RIVER ROUGE
FOR TOTAL POPULATION
FOR ½ MILE SECTIONS


TOTAL POPULATION
1904-394 680
1907-449 138
1910-515 414
1913-614 486
SCALE:
FOR TOTAL POPULATION 0 100,000 200,000 300,000 400,000 500,000
FOR ½ MILE SECTIONS 0 10,000 20,000 30,000
NORTH DETROIT
GREENFIELD
HAMTRAMCK
ST. CLAIR HEIGHTS
BELLE ISLE PARK
GROSSE POINTE PARK
WINDSOR
SANDWICH
WALKERVILLE
RIVER

REDUCTION RATIO 17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

I.0

I.1

I.25

I.4

I.6

I.8

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

MAP 4

ISOCHRONAL LINES
FOR
PRESENT AND PROPOSED TRANSPORTATION FACILITIES

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

EXPLANATION

15 MIN — Lines of equal time for rush hour transportation from City Hall with present routing and facilities— By 5 minute intervals.

15 MIN — Lines of equal time for rush hour transportation from City Hall with proposed rerouting and facilities, including the institution of two-car units and skip-stops on all principal routes— By 5 minute intervals

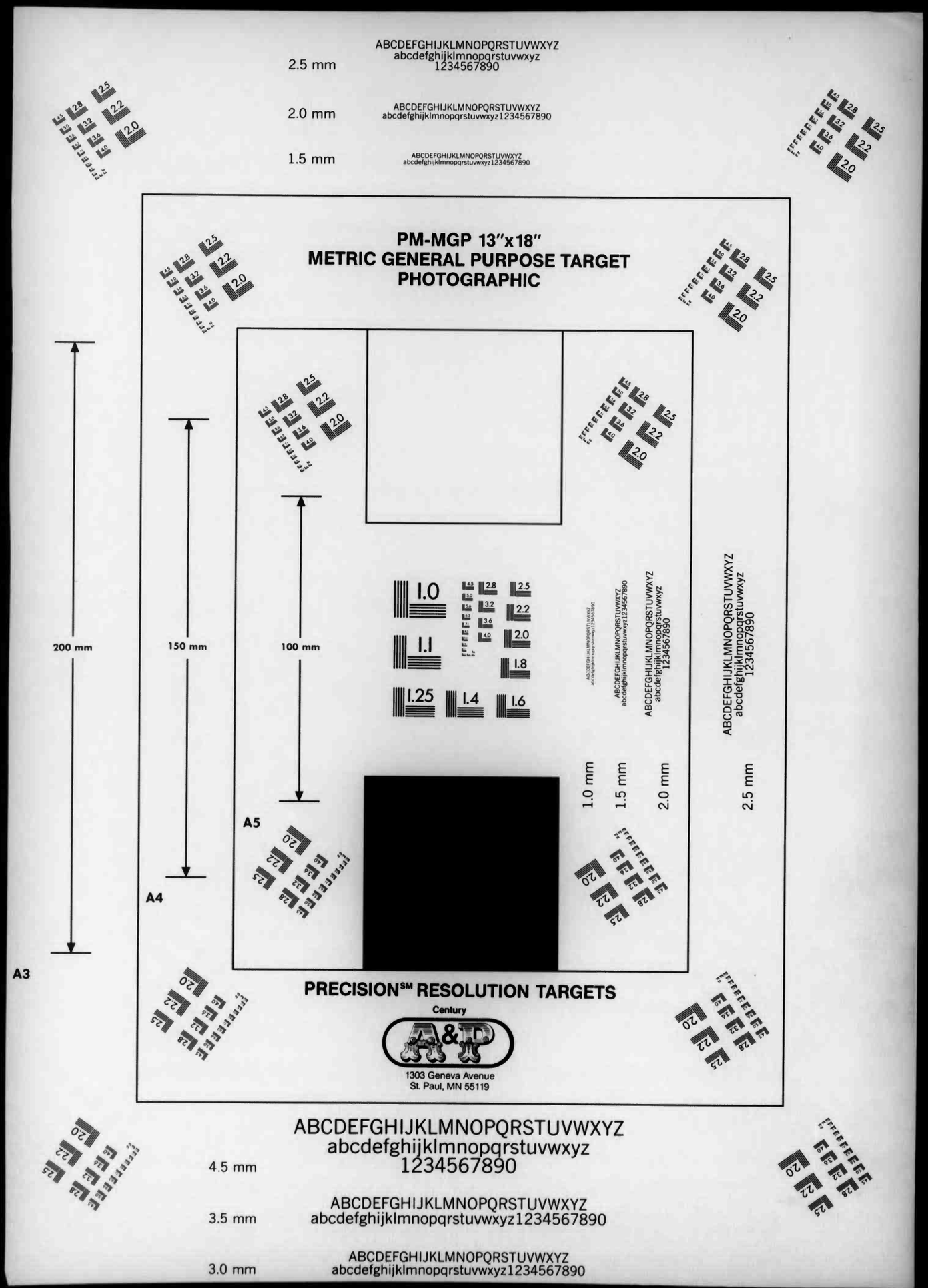
3 MILES — Lines of equal distance from City Hall— By 1 mile intervals

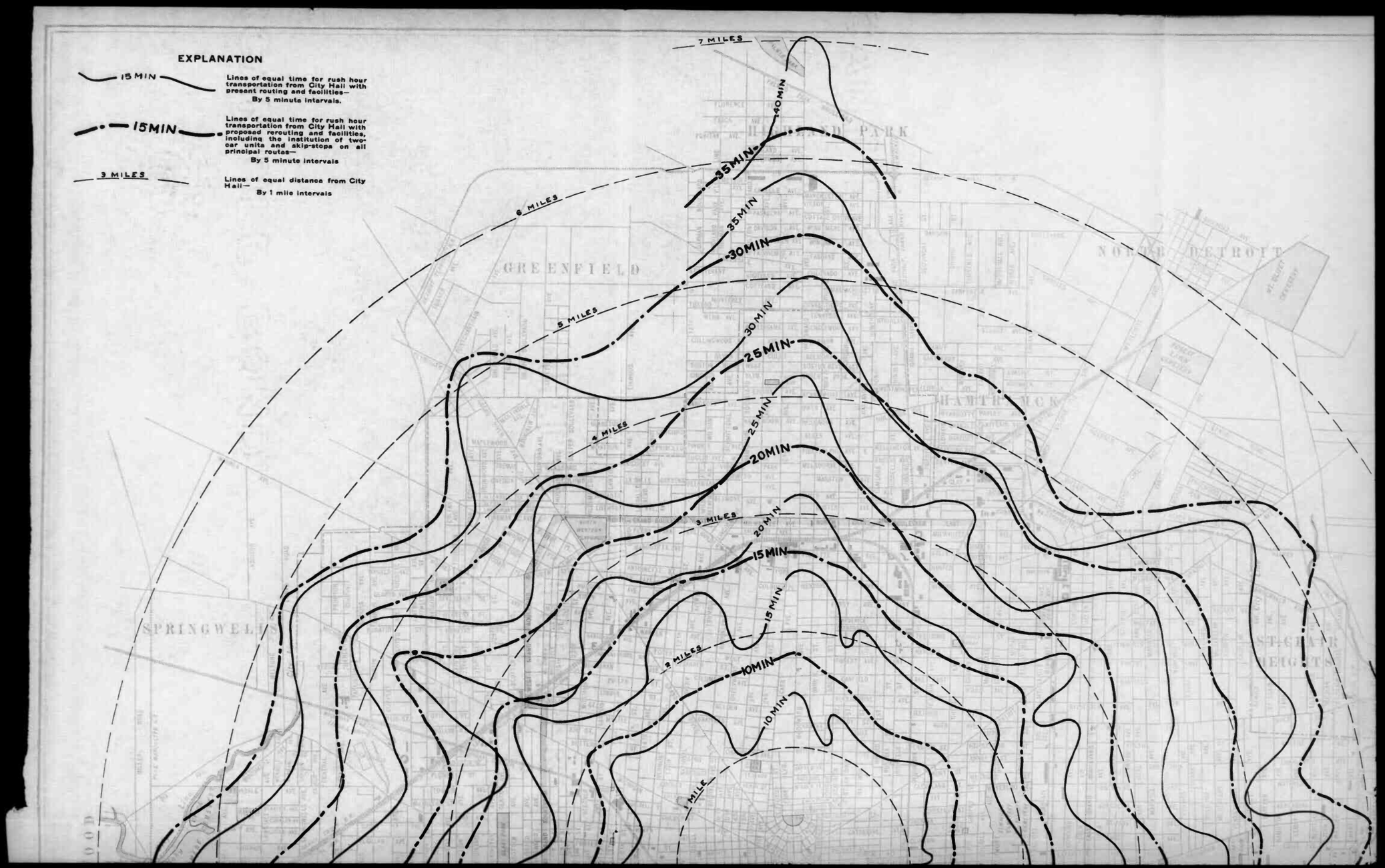
7 MILES
6 MILES
5 MILES
4 MILES
3 MILES
2 MILES
1 MILE
40 MIN
35 MIN
30 MIN
25 MIN
20 MIN
15 MIN
10 MIN
CITY HALL
HIGHLAND PARK
NORTH DETROIT
GREENFIELD
HAMTRAMCK
SPRINGWELLS
OAKWOOD
RIVER ROUGE
DETROIT RIVER
SANDWICH
WINDSOR
WALKERVILLE
BELLE ISLE PARK
GROSSE POINTE PARK

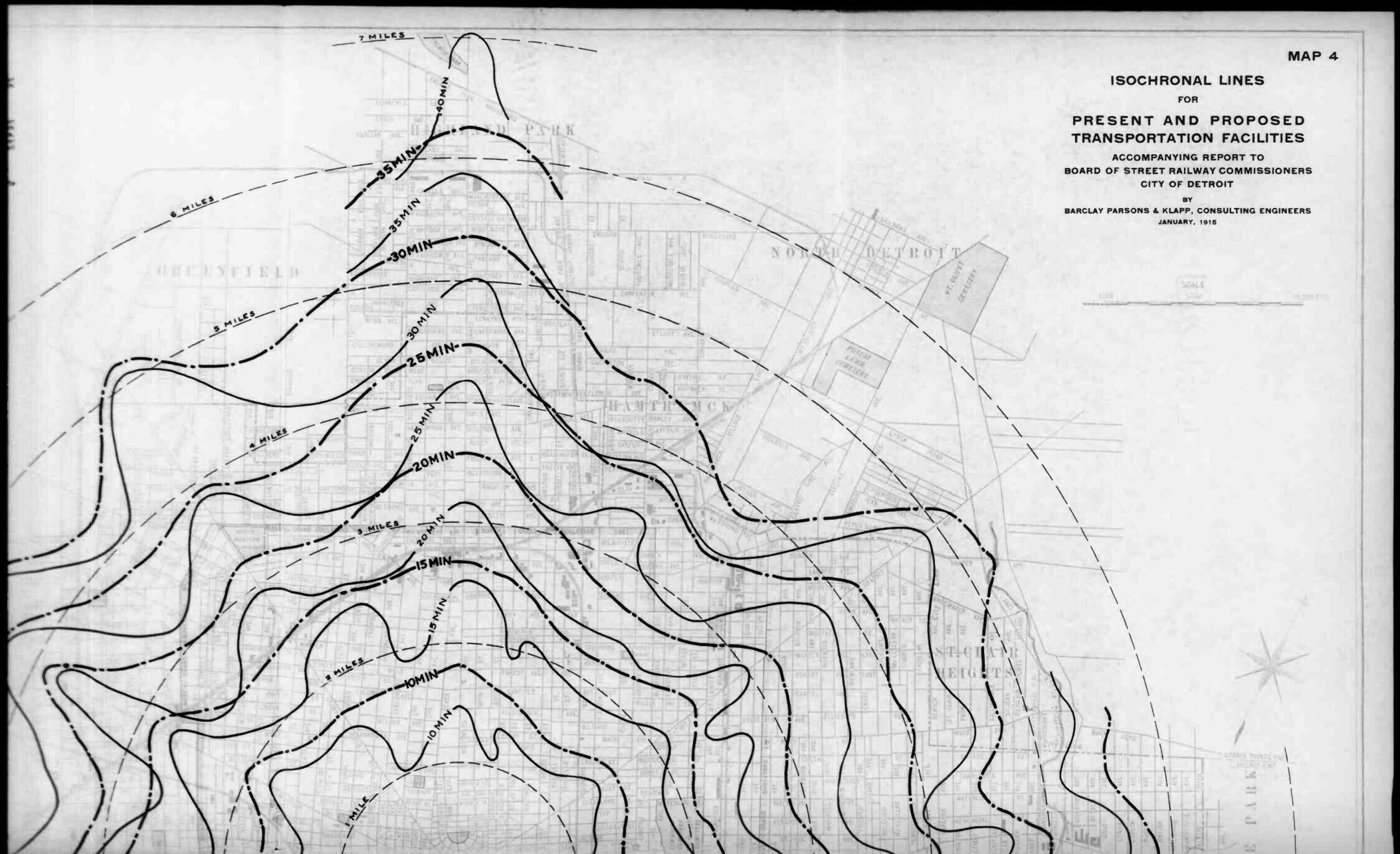
REDUCTION

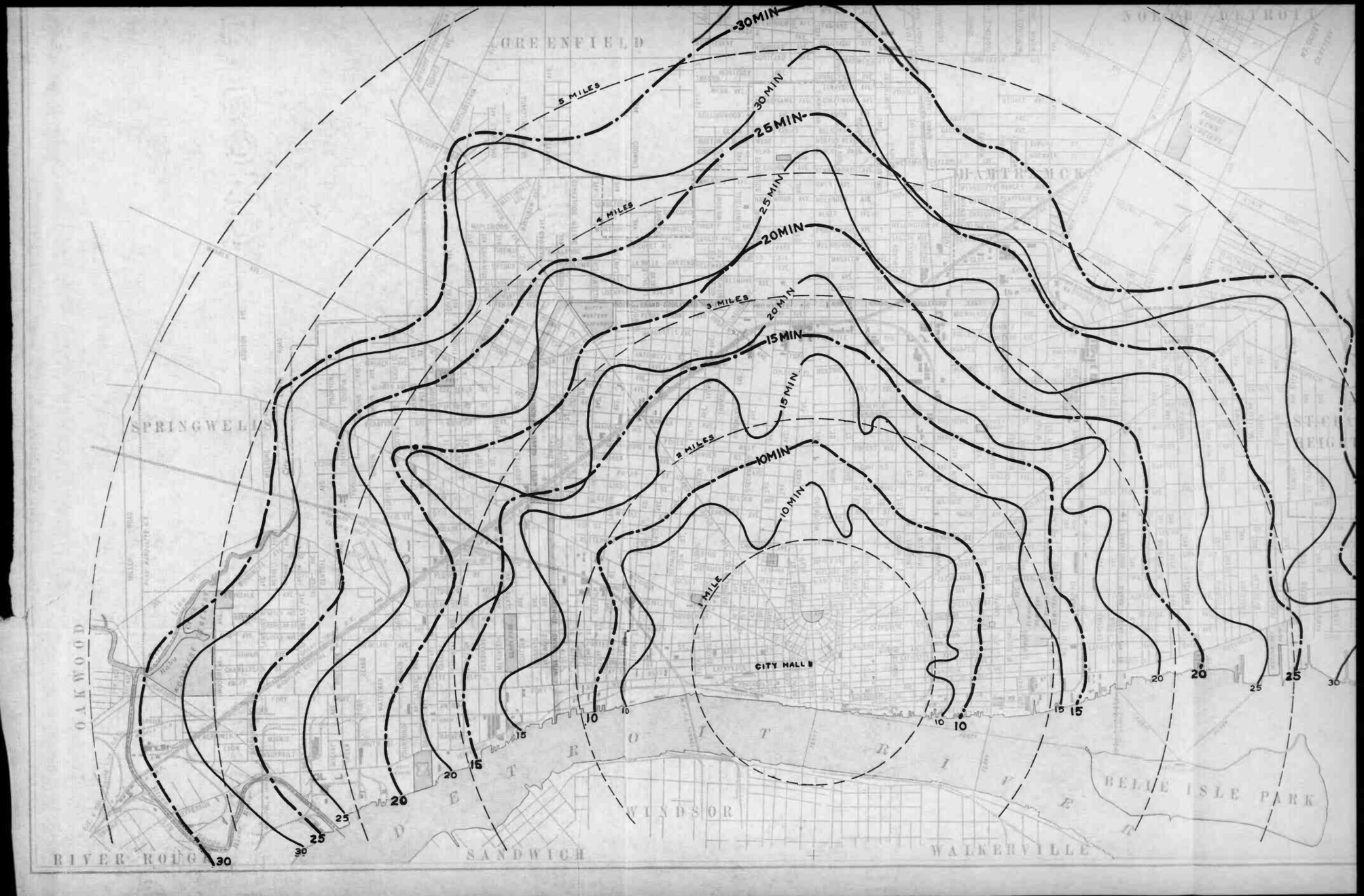
RATIO

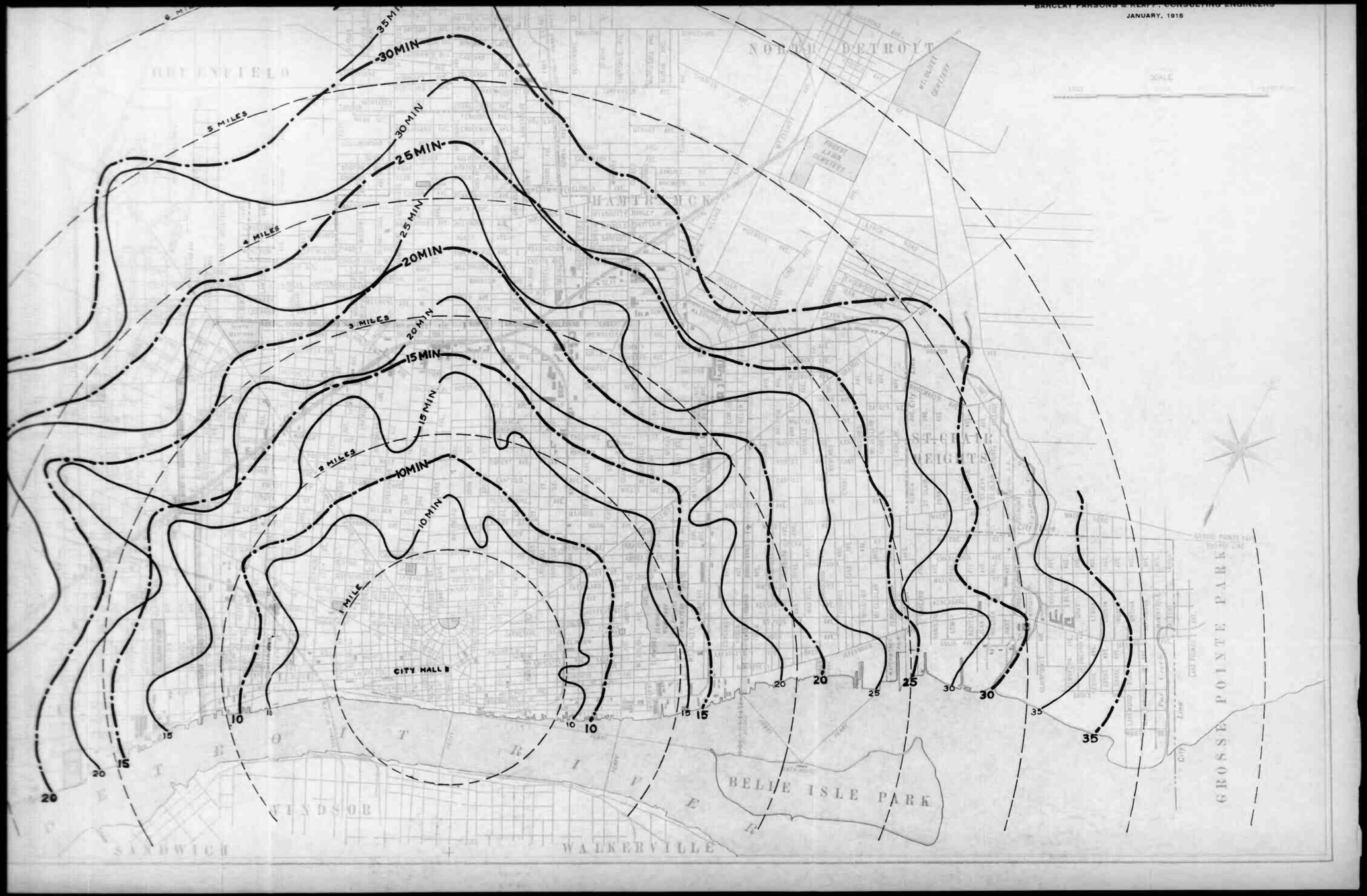
16:1


2.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
2.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
1.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC
200 mm
150 mm
100 mm
A3
A4
A5
1.0
1.1
1.25
1.4
1.6
1.8
1.0 mm
1.5 mm
2.0 mm
2.5 mm
PRECISION℠ RESOLUTION TARGETS
Century
A&P
1303 Geneva Avenue
St. Paul, MN 55119
4.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
3.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
3.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890


EXPLANATION
15 MIN
Lines of equal time for rush hour transportation from City Hall with present routing and facilities—
By 5 minute intervals.
15MIN
Lines of equal time for rush hour transportation from City Hall with proposed rerouting and facilities, including the institution of two-car units and skip-stops on all principal routes—
By 5 minute intervals
3 MILES
Lines of equal distance from City Hall—
By 1 mile intervals
7 MILES
6 MILES
5 MILES
4 MILES
3 MILES
2 MILES
1 MILE
40 MIN
35MIN
35 MIN
30MIN
30 MIN
25MIN
25 MIN
20MIN
20 MIN
15MIN
15 MIN
10MIN
10 MIN
GREENFIELD
NORTH DETROIT
SPRINGWELL


7 MILES
40 MIN
35 MIN
6 MILES
35 MIN
30 MIN
5 MILES
30 MIN
25 MIN
4 MILES
25 MIN
20 MIN
3 MILES
20 MIN
15 MIN
15 MIN
2 MILES
10 MIN
10 MIN
1 MILE
MAP 4
ISOCHRONAL LINES
FOR
PRESENT AND PROPOSED
TRANSPORTATION FACILITIES
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915
SCALE


30MIN
25MIN
20MIN
15MIN
10MIN
5 MILES
4 MILES
3 MILES
2 MILES
1 MILE
CITY HALL
GREENFIELD
SPRINGWELLS
OAKWOOD
RIVER ROUGE
SANDWICH
WINDSOR
WALKERVILLE
BELLE ISLE PARK
DETROIT RIVER


BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915
35MIN
30MIN
30 MIN
25MIN
25 MIN
20MIN
20 MIN
15MIN
15 MIN
10MIN
10 MIN
5 MILES
4 MILES
3 MILES
2 MILES
1 MILE
CITY HALL
DETROIT
HAMTRAMCK
BELLE ISLE PARK
GROSSE POINTE PARK
WINDSOR
SANDWICH
WALKERVILLE
DETROIT RIVER

REDUCTION RATIO 17:1

2.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

MAP 5

PRESENT ROUTING OF STREET CAR LINES THROUGH CONGESTED DISTRICT

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

Jefferson
Hamilton
Myrtle
Hamilton
14th
West Warren
Woodward
Brush
14th
Michigan
Trumbull
M. C. Depot
Baker
Sherman
Michigan
Baker
Harper
Sherman
Harper
Sherman
Fort
Fort
Myrtle
Myrtle
Jefferson
Hamilton
Woodward

GRAND CIRCUS
CITY HALL
CADILLAC SQ.
DETROIT RIVER

EXPLANATION

Name of Line	Symbol	Name of Line	Symbol
Baker	— —	Michigan	———
Brush	- - - -	Myrtle	— — —
Fort	— . —	New Michigan Central Depot	———
Fourteenth and Warren West	- - - -	Sherman	— - —
Hamilton	— —	Trumbull	— - —
Harper	— — —	Woodward	———
Jefferson	———		

MAP 5-A

PROPOSED REROUTING OF STREET CAR LINES IN CONGESTED DISTRICT

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS AND CLAPP, CONSULTING ENGINEERS
JANUARY, 1915

Jefferson
Hamilton
Mich. Central Depot
14th and West Warren
Woodward
Brush
14th
Brush
Grand Circus Loop
Michigan
Trumbull
M. C. Depot
Baker
Sherman
Baker
Michigan
Baker
Sherman
Baker
Harper
Sherman
Sherman
Harper
Fort
Fort
Cadillac Square Loops
City Hall Loop
Myrtle
Fort
Myrtle
Fort
City Hall Loop
Cadillac Square Loop
Myrtle
Fort
Woodward
Jefferson
River Loop

GRAND CIRCUS
CITY HALL
DETROIT RIVER

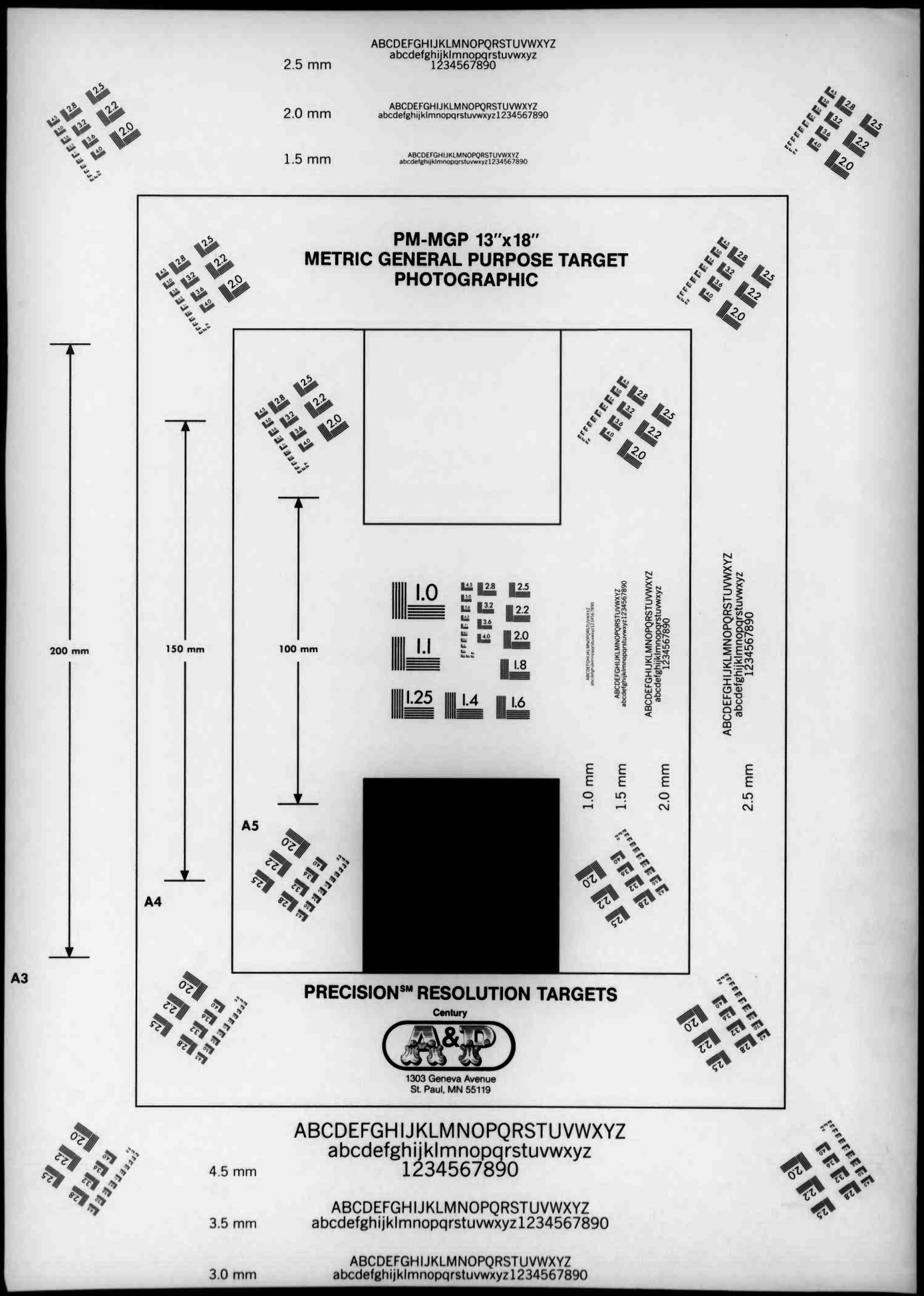
EXPLANATION

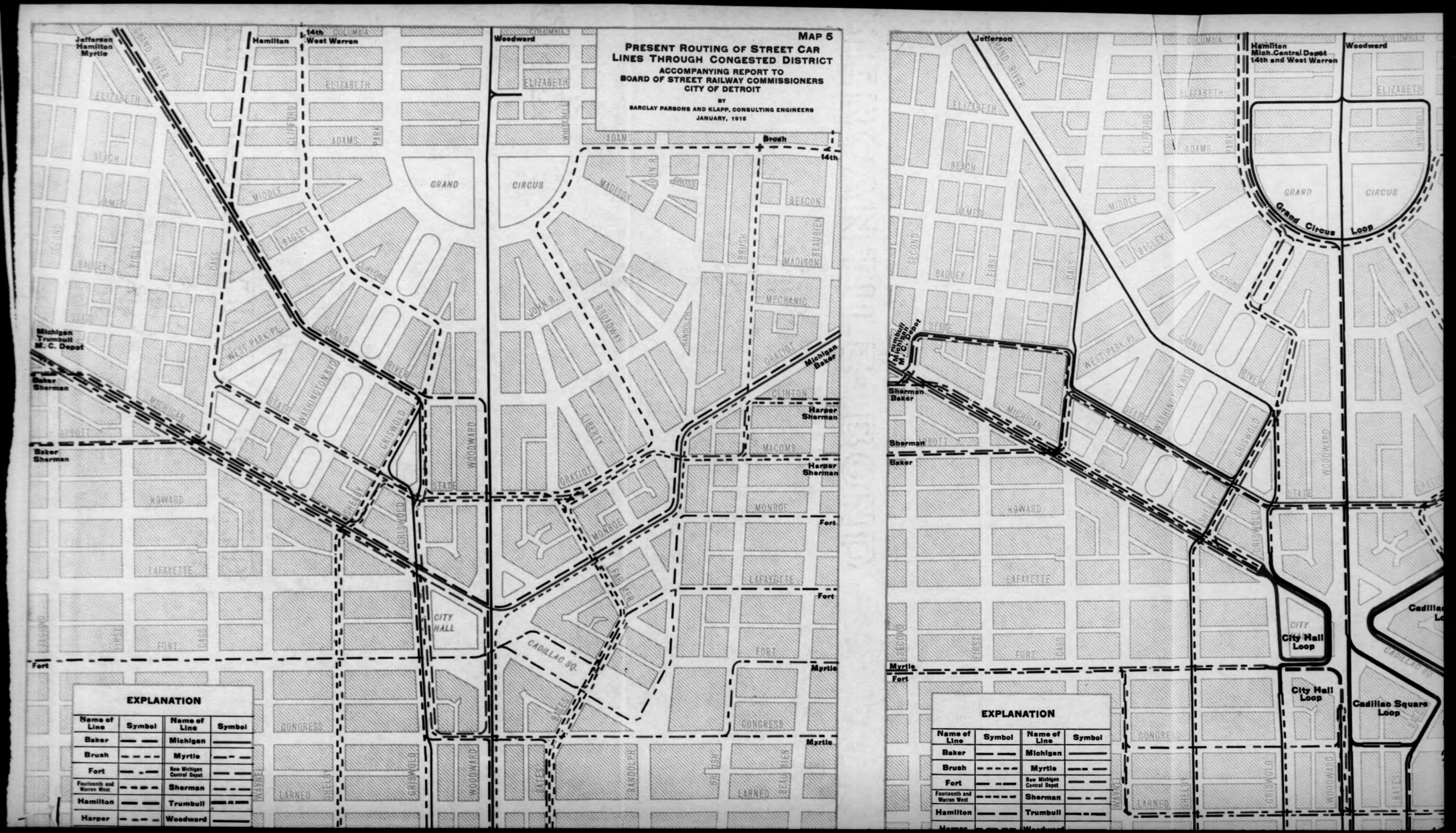
Name of Line	Symbol	Name of Line	Symbol
Baker	— —	Michigan	———
Brush	- - - -	Myrtle	— — —
Fort	— . —	New Michigan Central Depot	———
Fourteenth and Warren West	- - - -	Sherman	— - —
Hamilton	— —	Trumbull	— - —
Harper	— — —	Woodward	———
Jefferson	———		

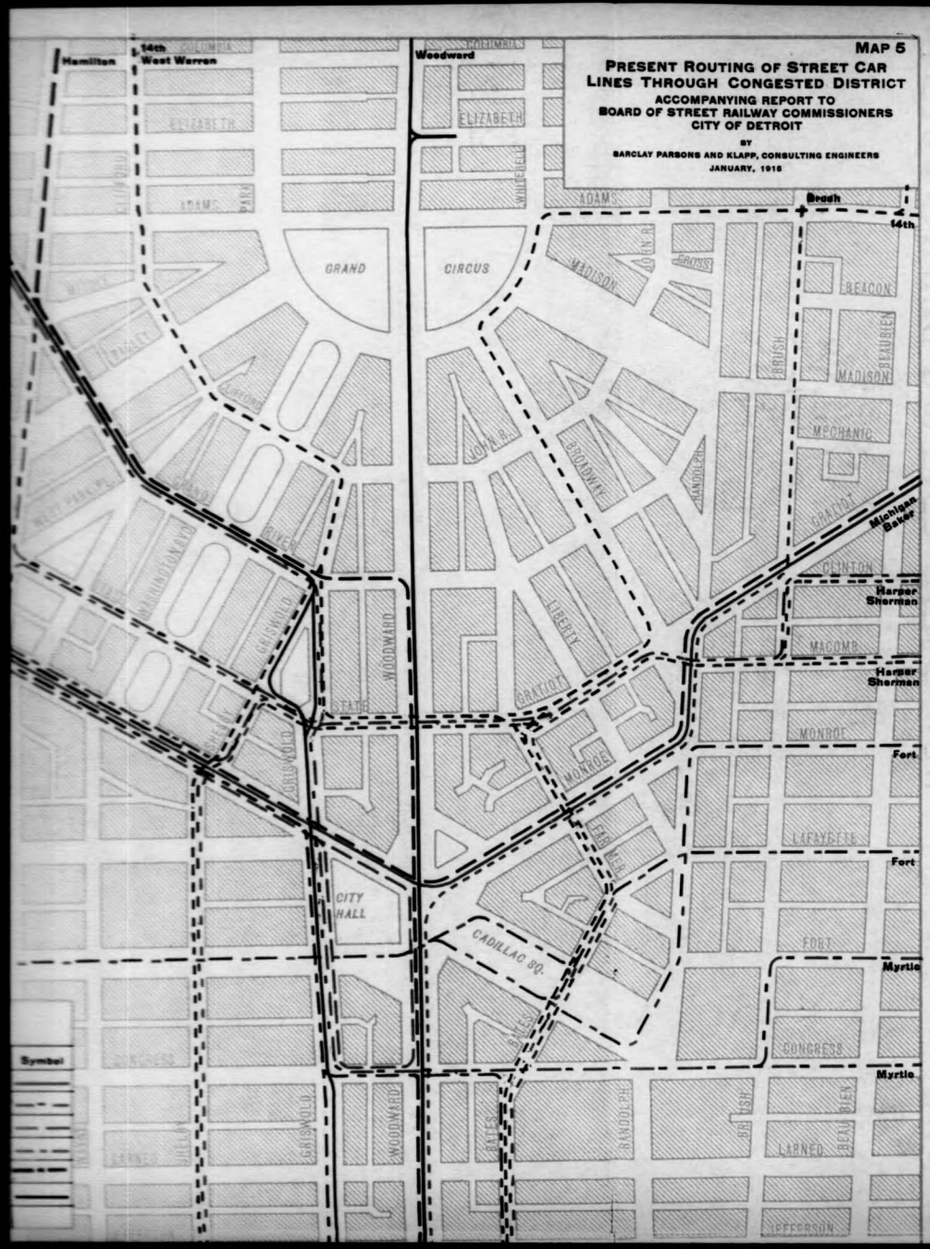
REDUCTION

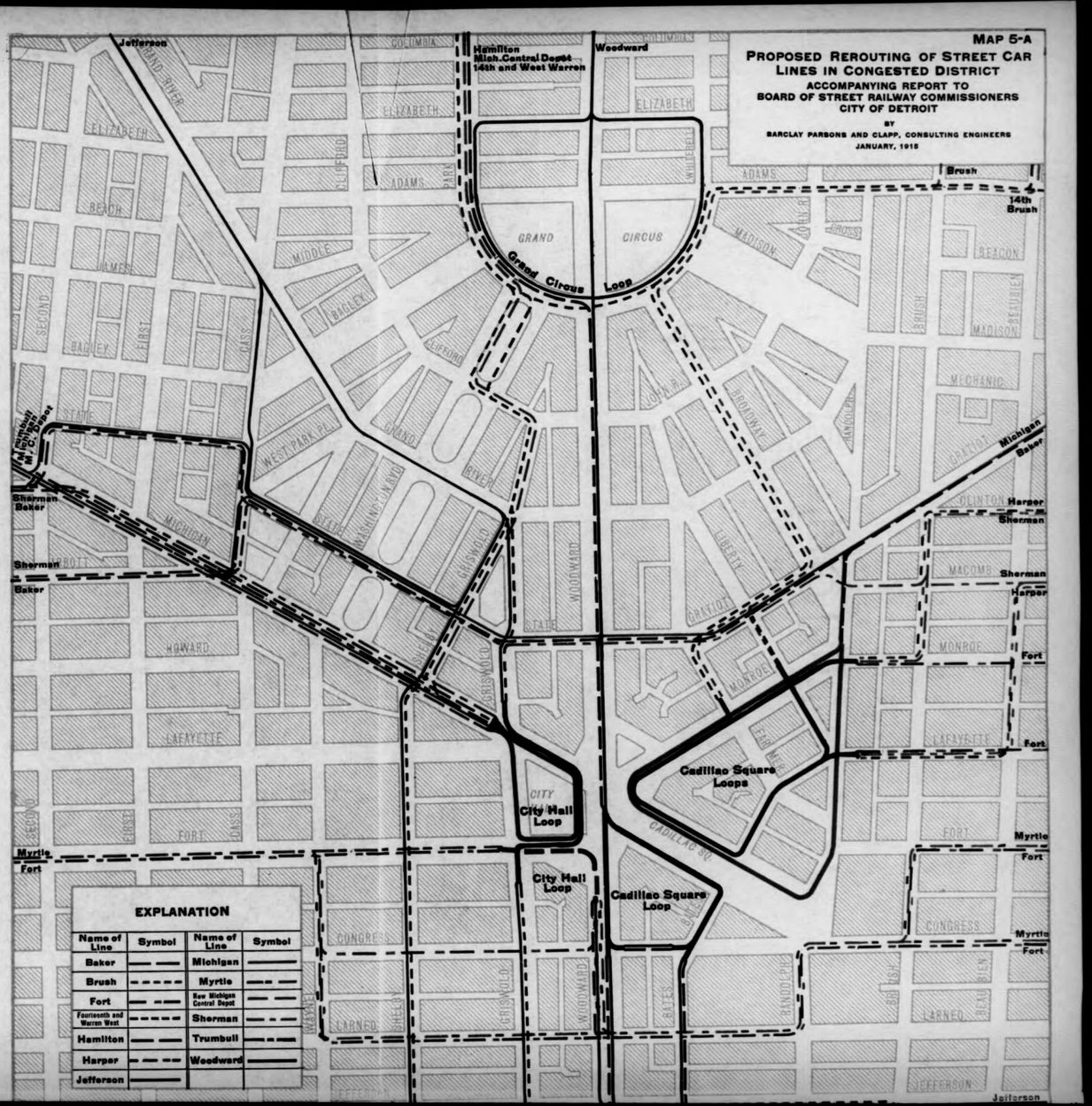
RATIO

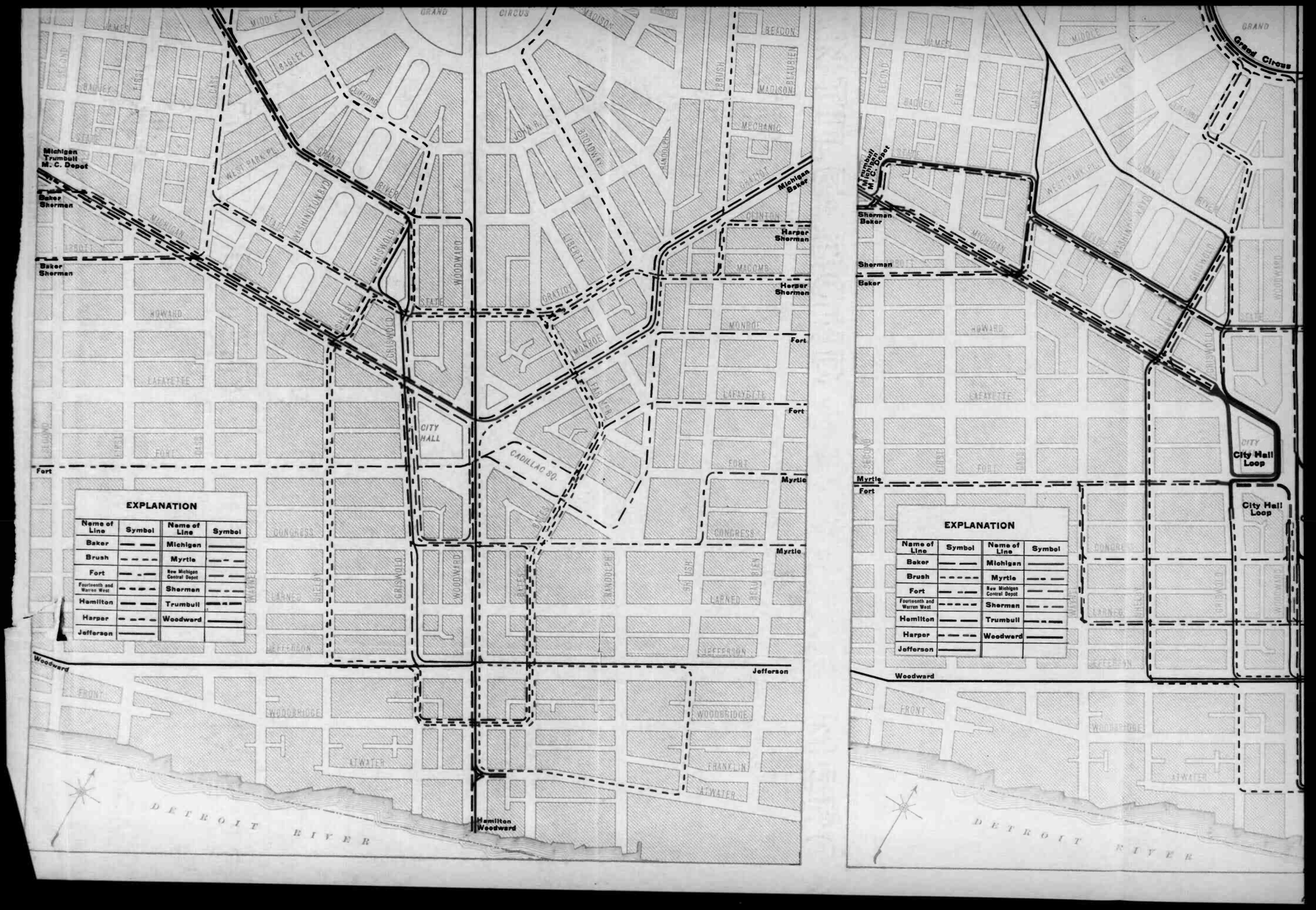
16:1

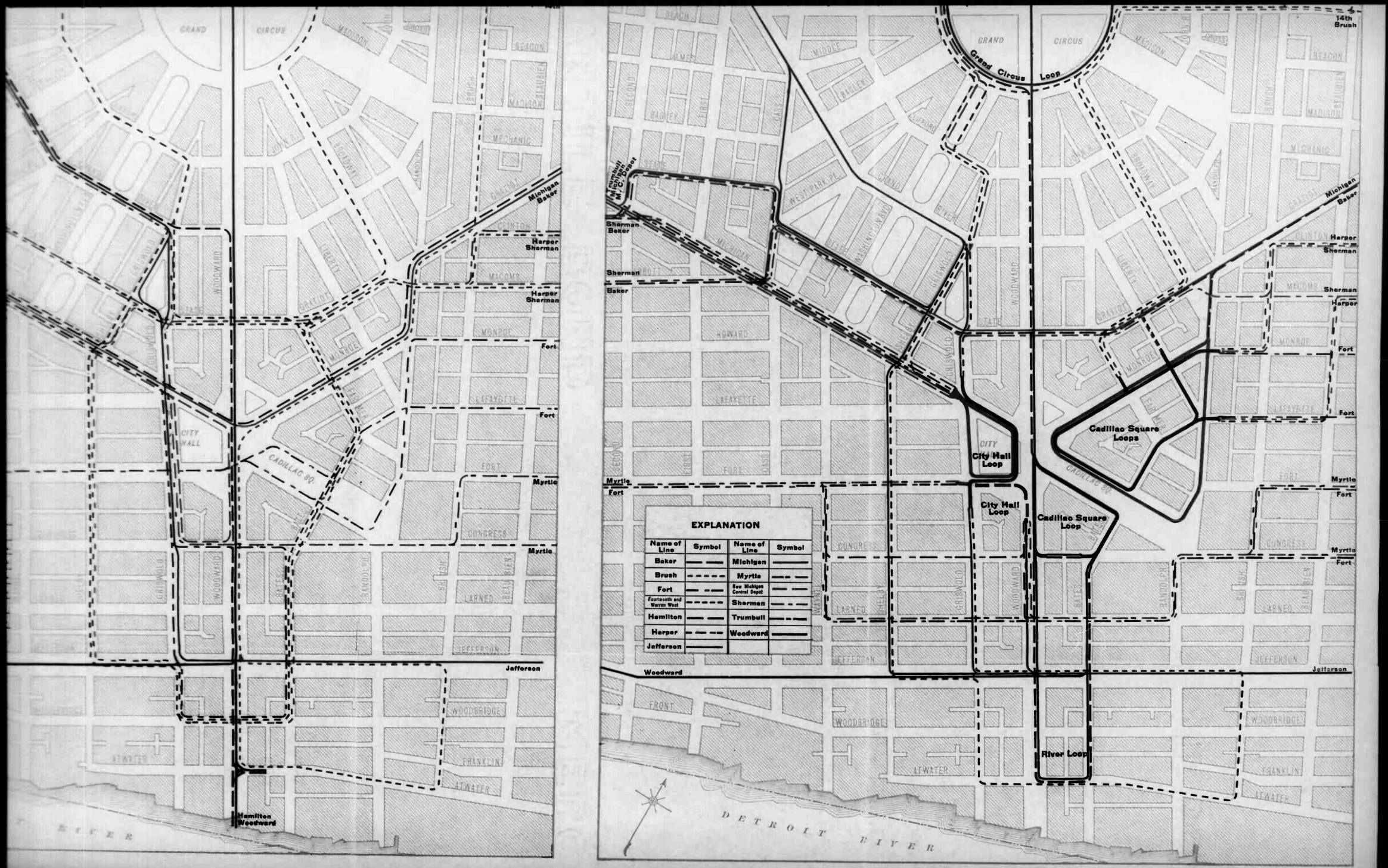

2.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
2.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
1.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC
200 mm
150 mm
100 mm
A3
A4
A5
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
1.0 mm
1.5 mm
2.0 mm
2.5 mm
PRECISION℠ RESOLUTION TARGETS
Century
A&D
1303 Geneva Avenue
St. Paul, MN 55119
4.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
3.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
3.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890


MAP 5
PRESENT ROUTING OF STREET CAR LINES THROUGH CONGESTED DISTRICT
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT
BY BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916
Jefferson Hamilton Myrtle
Hamilton
14th West Warren
Woodward
Brush
14th
Michigan Trumbull M. C. Depot
Baker Sherman
Michigan Baker
Harper Sherman
Fort
Myrtle
CITY HALL
CADILLAC SQ.
GRAND CIRCUS
Grand Circus Loop
City Hall Loop
Cadillac Square Loop
EXPLANATION
Name of Line | Symbol | Name of Line | Symbol
Baker | Michigan
Brush | Myrtle
Fort | New Michigan Central Depot
Fourteenth and Warren West | Sherman
Hamilton | Trumbull
Harper | Woodward


MAP 5
PRESENT ROUTING OF STREET CAR LINES THROUGH CONGESTED DISTRICT
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT
BY BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916
Hamilton
14th
West Warren
Woodward
Brush
14th
Michigan
Baker
Harper
Sherman
Fort
Myrtle
CADILLAC SQ.
CITY HALL
GRAND CIRCUS
Symbol


MAP 5-A
PROPOSED REROUTING OF STREET CAR LINES IN CONGESTED DISTRICT
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT
BY BARCLAY PARSONS AND CLAPP, CONSULTING ENGINEERS
JANUARY, 1916
Jefferson
Hamilton
Mich. Central Depot
14th and West Warren
Woodward
Brush
14th
Grand Circus Loop
Michigan
Baker
Sherman
Harper
Fort
Myrtle
City Hall Loop
Cadillac Square Loop
EXPLANATION
Name of Line
Symbol
Baker
Brush
Fort
Fourteenth and Warren West
Hamilton
Harper
Jefferson
Michigan
Myrtle
New Michigan Central Depot
Sherman
Trumbull
Woodward


Michigan Trumbull M. C. Depot
Baker Sherman
Baker Sherman
Harper Sherman
Harper Sherman
Michigan Baker
Fort
Fort
Fort
Myrtle
Myrtle
Jefferson
Woodward
Hamilton Woodward
CITY HALL
CADILLAC SQ.
EXPLANATION
Name of Line | Symbol | Name of Line | Symbol
Baker | Michigan
Brush | Myrtle
Fort | New Michigan Central Depot
Fourteenth and Warren West | Sherman
Hamilton | Trumbull
Harper | Woodward
Jefferson
DETROIT RIVER
Grand Circus
Michigan Trumbull M. C. Depot
Sherman Baker
Sherman Baker
Myrtle Fort
CITY City Hall Loop
City Hall Loop
EXPLANATION
Name of Line | Symbol | Name of Line | Symbol
Baker | Michigan
Brush | Myrtle
Fort | New Michigan Central Depot
Fourteenth and Warren West | Sherman
Hamilton | Trumbull
Harper | Woodward
Jefferson
Woodward
DETROIT RIVER


Grand Circus Loop
Michigan Baker
Harper Sherman
Sherman Baker
Sherman
Harper
Fort
Myrtle
City Hall Loop
Cadillac Square Loop
River Loop
Hamilton Woodward
Jefferson
Woodward
EXPLANATION
Name of Line
Symbol
Baker
Brush
Fort
Fourteenth and Warren West
Hamilton
Harper
Jefferson
Michigan
Myrtle
New Michigan Central Depot
Sherman
Trumbull
Woodward
GRAND CIRCUS
CITY HALL
CADILLAC SQ.
WOODWARD
GRISWOLD
WASHINGTON
BROADWAY
MADISON
BEACON
MECHANIC
CLINTON
LIBERTY
GRATIOT
MONROE
FORT
LAFAYETTE
CONGRESS
LARNED
JEFFERSON
WOODBRIDGE
FRANKLIN
ATWATER
HOWARD
MICHIGAN
STATE
WEST PARK PL.
RIVER
DETROIT RIVER

REDUCTION RATIO 17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

MAP 6

COMPLETE REROUTED TRACK PLANS AND VEHICLE ROUTING FOR CITY HALL AND CADILLAC SQUARE DISTRICTS

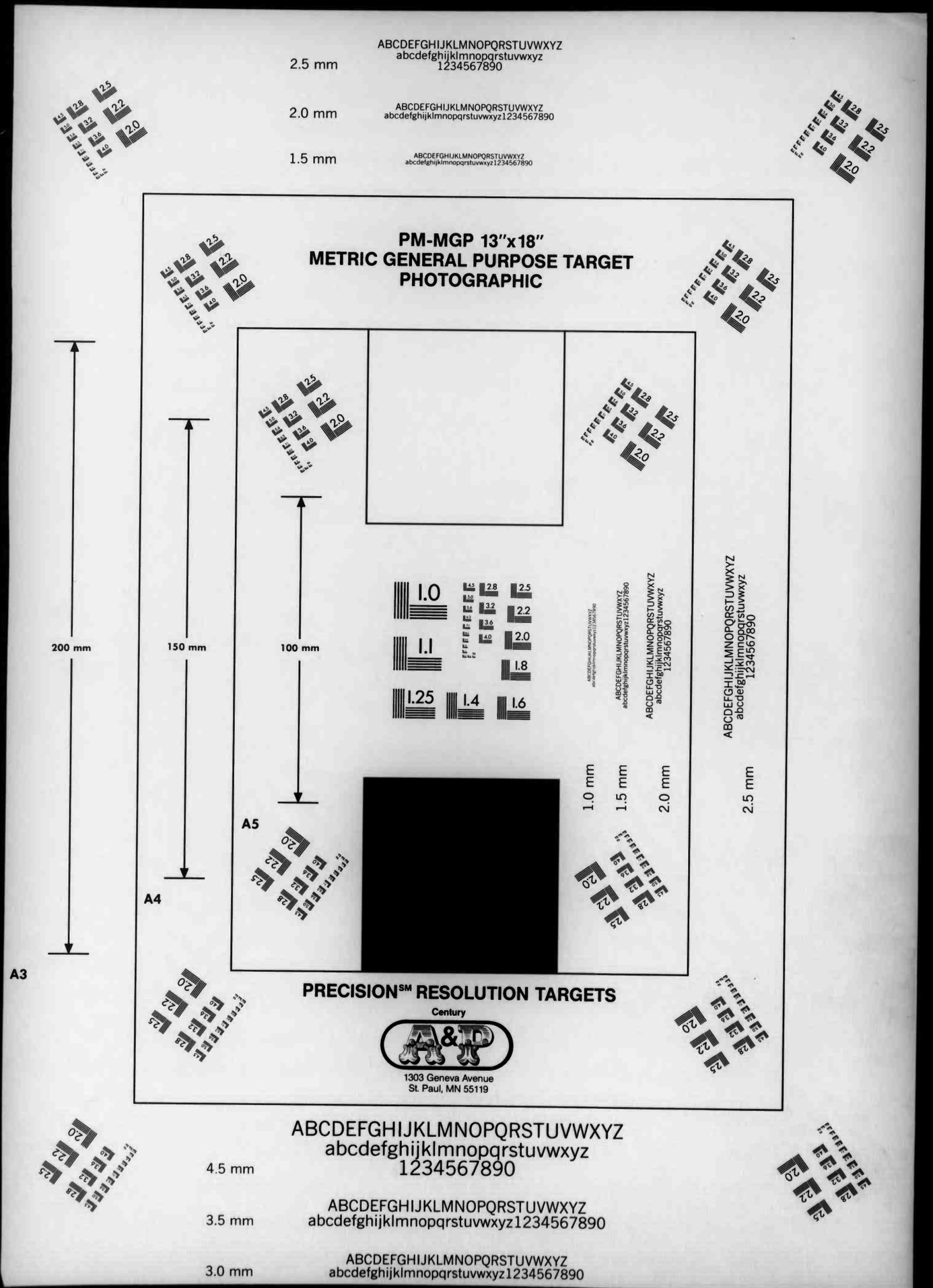
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

SCALE IN FEET
0 100 200

BLVD.
WASHINGTON
STATE
GRISWOLD
BROADWAY
MACOMB
GRATIOT
SHELBY
MICHIGAN
LIBRARY
MONROE
FARMER
LOADING, CURB HIGH
LAFAYETTE
LOADING
LOADING ZONE
CITY HALL
FORT W.
CADILLAC SQ.
TRANSFER ZONE
BATES
RANDOLPH
FORT E.
PLATFORM (SURFACE)
WOODWARD
INTERURBAN WAITING ROOM
CONGRESS W.
CONGRESS E.

REDUCTION RATIO 16:1


2.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
2.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
1.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC
200 mm
150 mm
100 mm
A3
A4
A5
1.0
1.1
1.25
1.4
1.6
1.8
1.0 mm
1.5 mm
2.0 mm
2.5 mm
PRECISION℠ RESOLUTION TARGETS
Century
A&P
1303 Geneva Avenue
St. Paul, MN 55119
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
4.5 mm
3.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
3.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

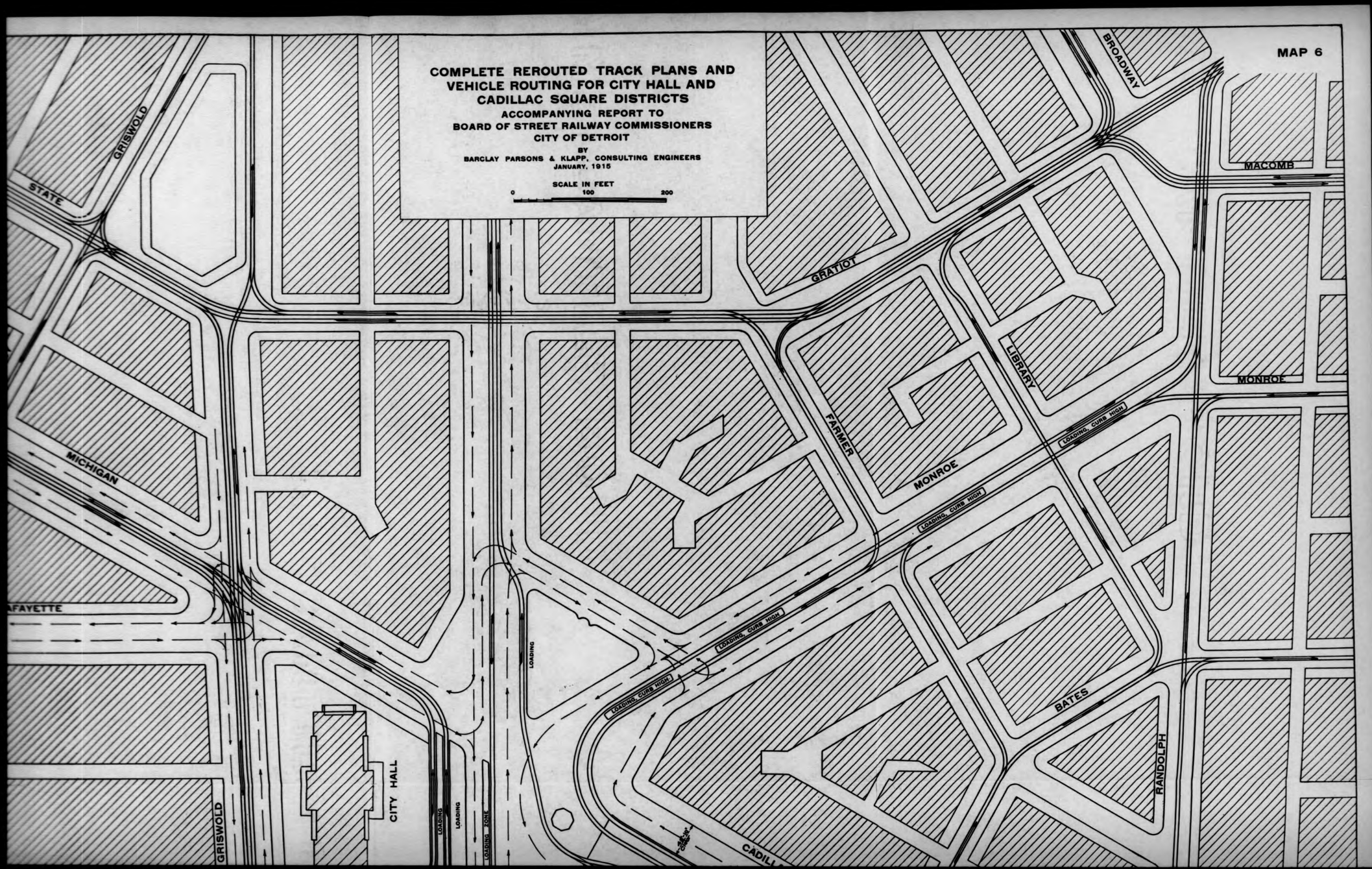
COMPLETE REROUTED TRACK PLANS AND VEHICLE ROUTING FOR CITY HALL AND CADILLAC SQUARE DISTRICTS

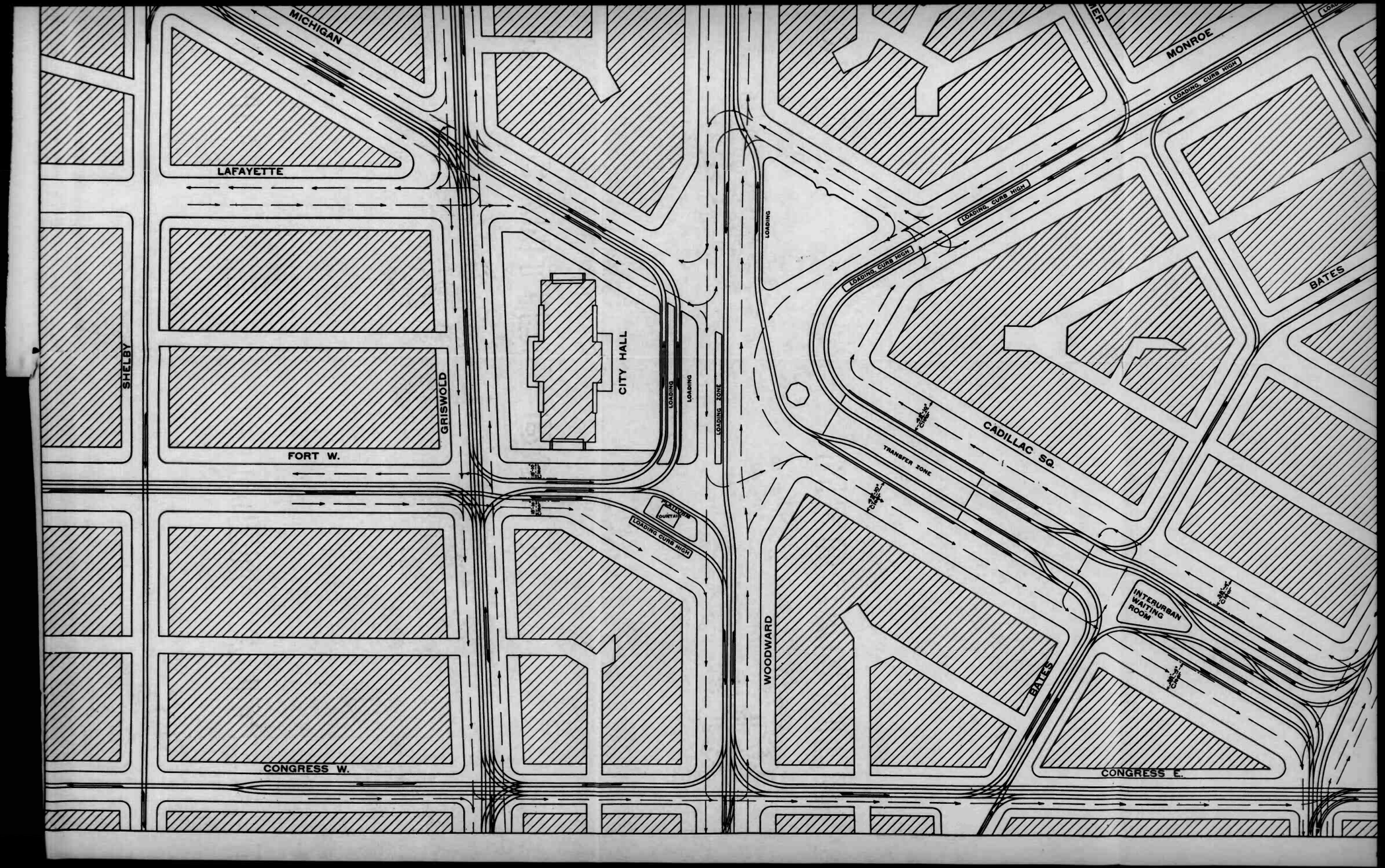
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

SCALE IN FEET
0 100 200

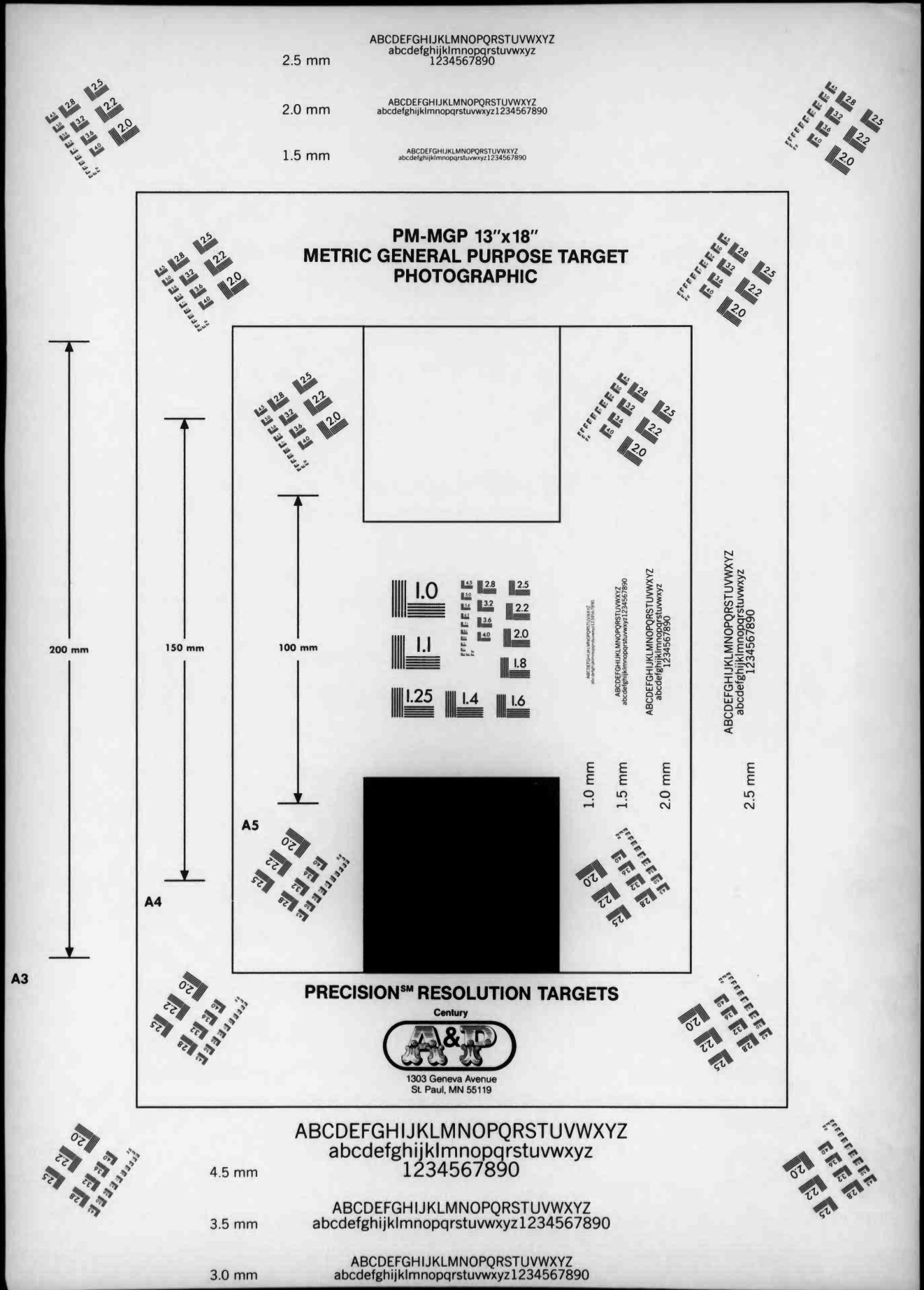
BLVD.
GRISWOLD
STATE
WASHINGTON
SHELBY
MICHIGAN
LAFAYETTE
FORT W.
GRISWOLD
SHELBY
CITY HALL
LOADING
LOADING
LOADING ZONE
LOADING
GRATIOT
BROADWAY
LIBRARY
FARMER
MONROE
LOADING, CURB HIGH
LOADING, CURB HIGH
LOADING, CURB HIGH
LOADING, CURB HIGH
BATES
RANDOLPH
CADILLAC SQ.
TRANSFER ZONE


COMPLETE REROUTED TRACK PLANS AND
VEHICLE ROUTING FOR CITY HALL AND
CADILLAC SQUARE DISTRICTS
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915
SCALE IN FEET
0 100 200
MAP 6
BROADWAY
MACOMB
GRISWOLD
STATE
GRATIOT
LIBRARY
MONROE
FARMER
LOADING, CURB HIGH
MICHIGAN
AFAYETTE
LOADING
BATES
RANDOLPH
CITY HALL
LOADING
LOADING
LOADING ZONE
GRISWOLD


MICHIGAN
LAFAYETTE
SHELBY
GRISWOLD
FORT W.
CITY HALL
LOADING
LOADING
LOADING ZONE
LOADING
WOODWARD
MONROE
LOADING, CURB HIGH
LOADING, CURB HIGH
LOADING, CURB HIGH
BATES
CADILLAC SQ.
TRANSFER ZONE
INTERURBAN WAITING ROOM
BATES
CONGRESS W.
CONGRESS E.

CITY HALL
LOADING
LOADING
LOADING ZONE
LOADING
WOODWARD
TRANSFER ZONE
TRANSFER ZONE
TOWING CURB HIGH
TOWING CURB HIGH
TOWING CURB HIGH
CADILLAC SQ.
BATES
CONGRESS E.
INTERURBAN WAITING ROOM
BATES
RANDOLPH
FORT
E.

REDUCTION RATIO 17:1


ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
2.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
2.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
1.5 mm
PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC
200 mm
150 mm
100 mm
A3
A4
A5
1.0
1.1
1.25
1.4
1.6
2.5
2.2
2.0
1.8
1.0 mm
1.5 mm
2.0 mm
2.5 mm
PRECISION℠ RESOLUTION TARGETS
Century
1303 Geneva Avenue
St. Paul, MN 55119
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
4.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
3.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
3.0 mm

MAP 7

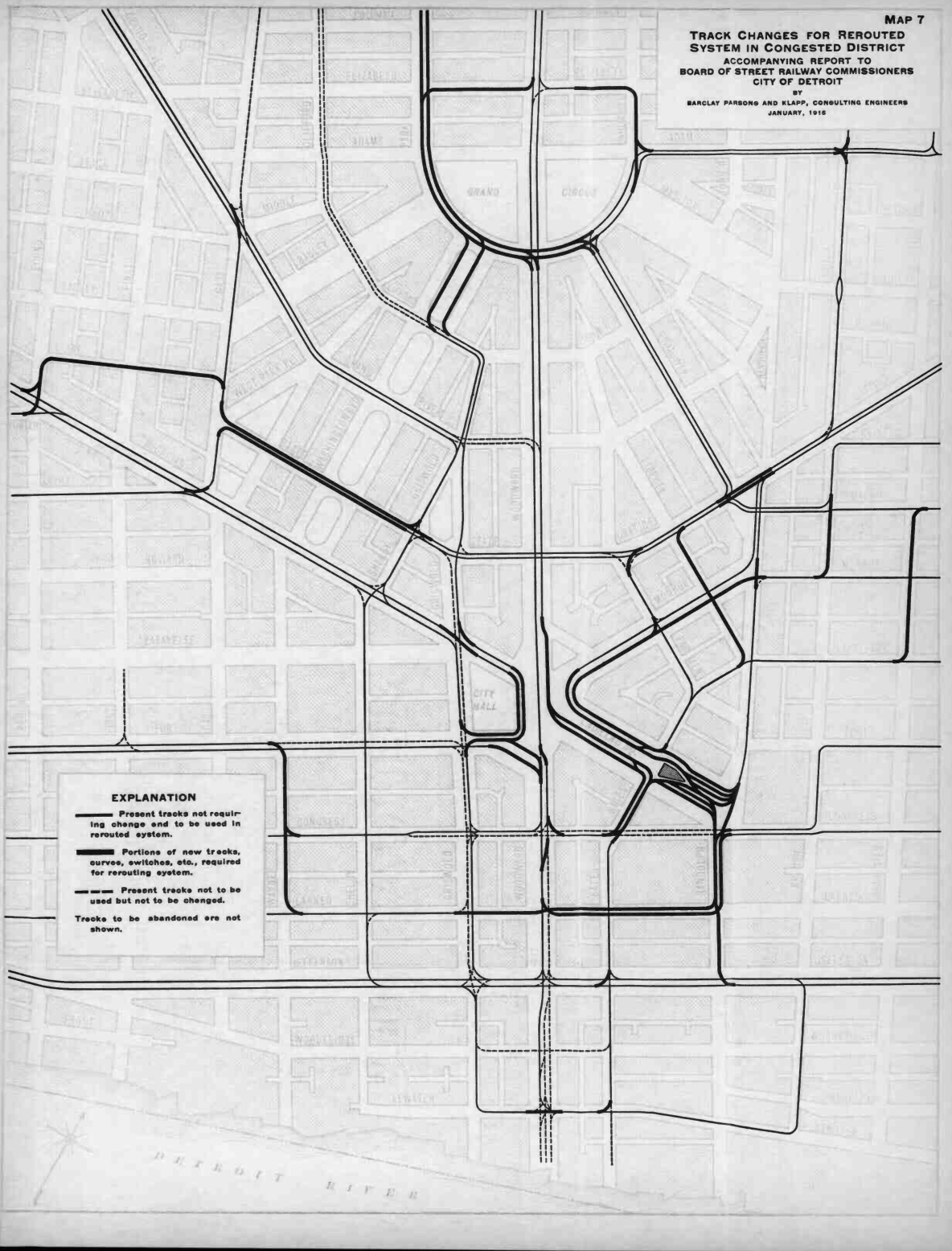
TRACK CHANGES FOR REROUTED SYSTEM IN CONGESTED DISTRICT

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY

BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS

JANUARY, 1916



EXPLANATION

Present tracks not requiring change and to be used in rerouted system.

Portions of new tracks, curves, switches, etc., required for rerouting system.

Present tracks not to be used but not to be changed.

Tracks to be abandoned are not shown.

REDUCTION RATIO 16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13″x18″
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

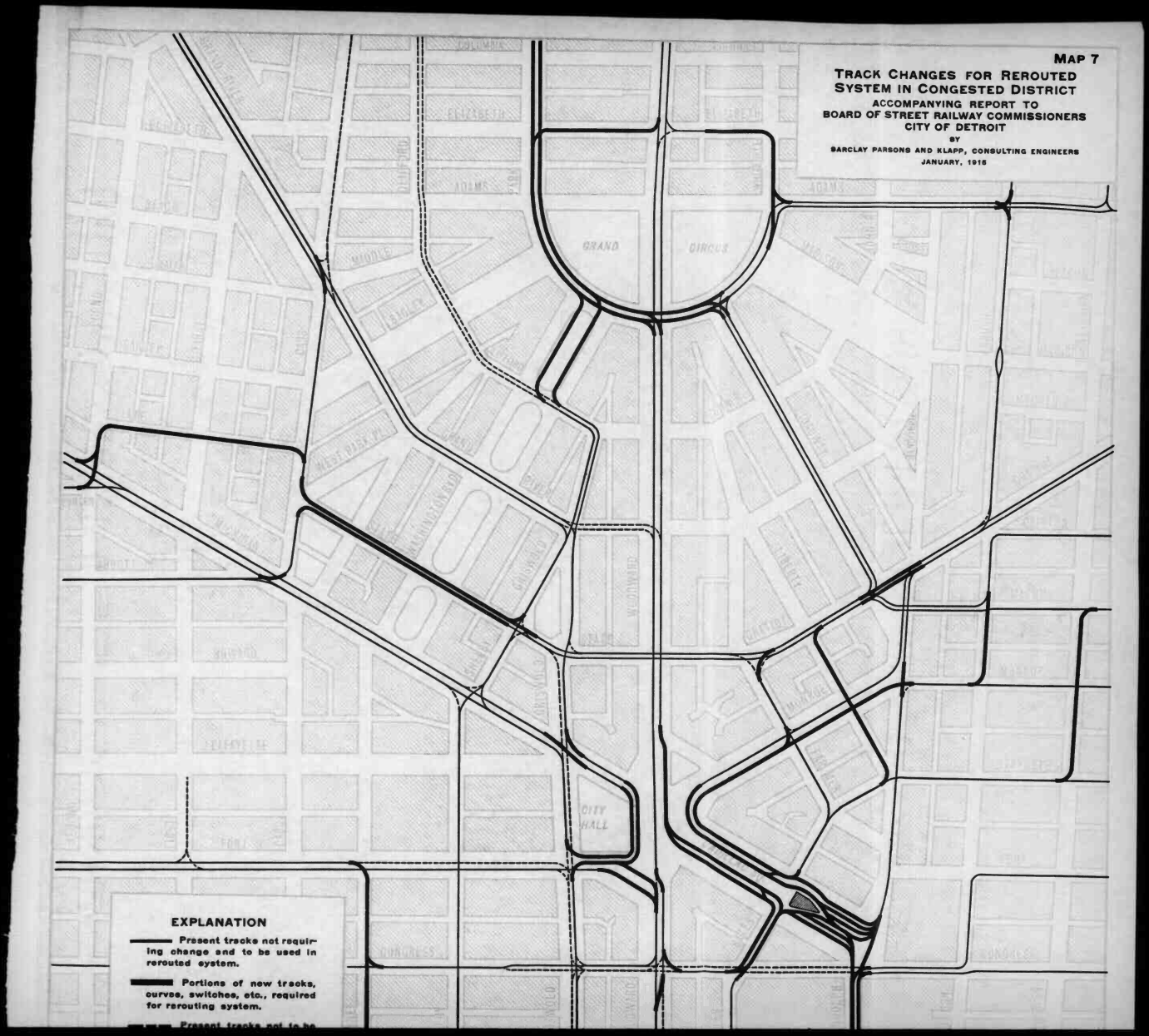
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

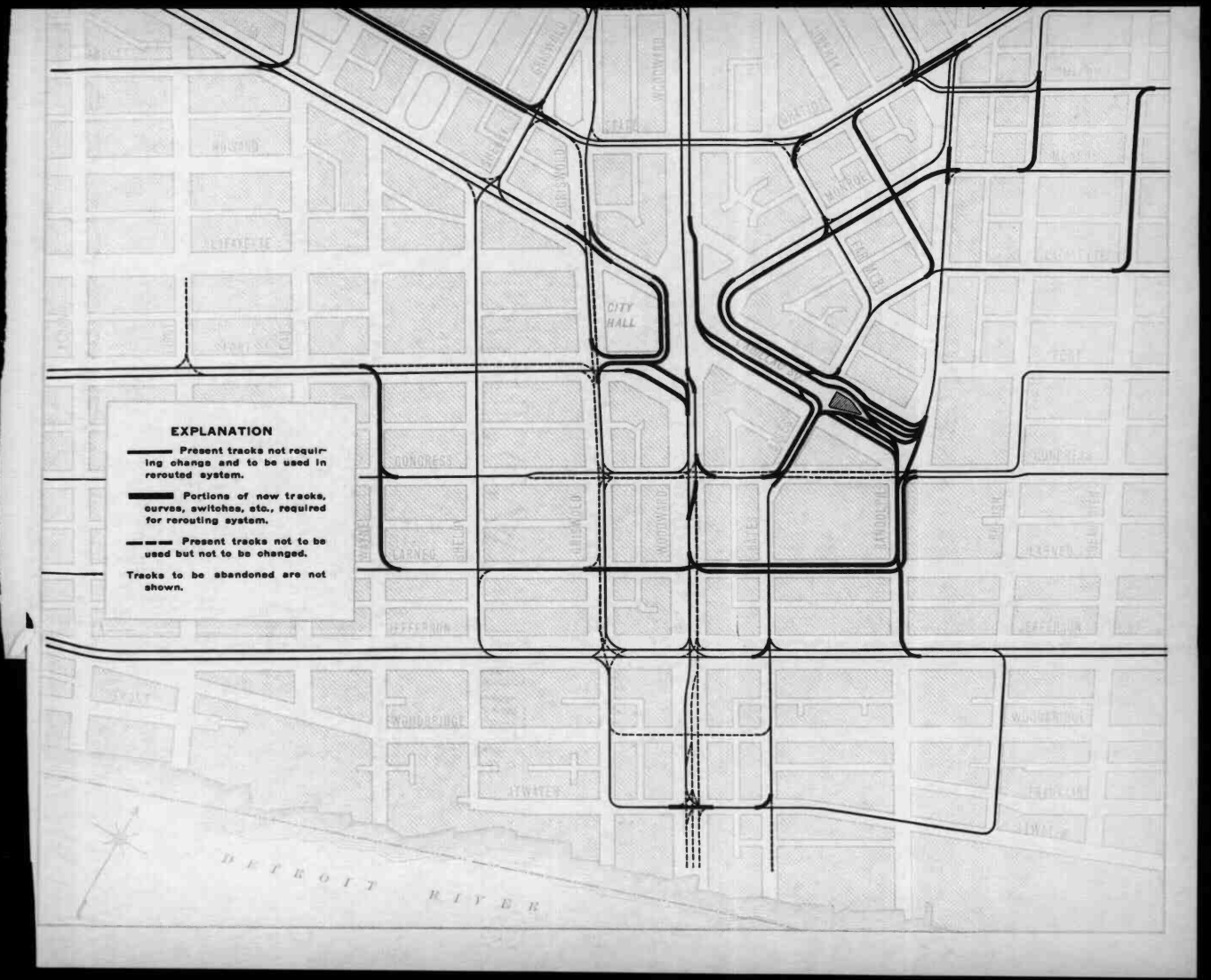
3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890


MAP 7
TRACK CHANGES FOR REROUTED SYSTEM IN CONGESTED DISTRICT
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT
BY
BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916
GRAND CIRCUS
CITY HALL
EXPLANATION
Present tracks not requiring change and to be used in rerouted system.
Portions of new tracks, curves, switches, etc., required for rerouting system.


EXPLANATION
Present tracks not requiring change and to be used in rerouted system.
Portions of new tracks, curves, switches, etc., required for rerouting system.
Present tracks not to be used but not to be changed.
Tracks to be abandoned are not shown.
CITY HALL
CONGRESS
DETROIT RIVER

REDUCTION RATIO 17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13″x18″
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

1.8

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

MAP 8

RESIDENTIAL LOCATION OF 45,611 DETROIT FACTORY WORKERS FROM 11 GROUPS OF FACTORIES

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

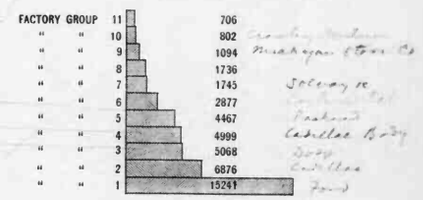
EXPLANATION

The large numbers from 1 to 11 in heavy circles denote the general location of different factories, or groups of factories, on the principal transportation lines of the City of Detroit.

The shaded areas divided into 11 horizontal strips numbered from 1 to 11 represent graphically the relative number of employees from each correspondingly numbered factory or group of factories resident in the square mile district in which the shaded strips are shown.

The figures on the right of each shaded strip give numerically the actual resident population in the district from the correspondingly numbered factory.

TOTAL NUMBER OF EMPLOYEES



REDUCTION RATIO 16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13″x18″
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

1.8

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

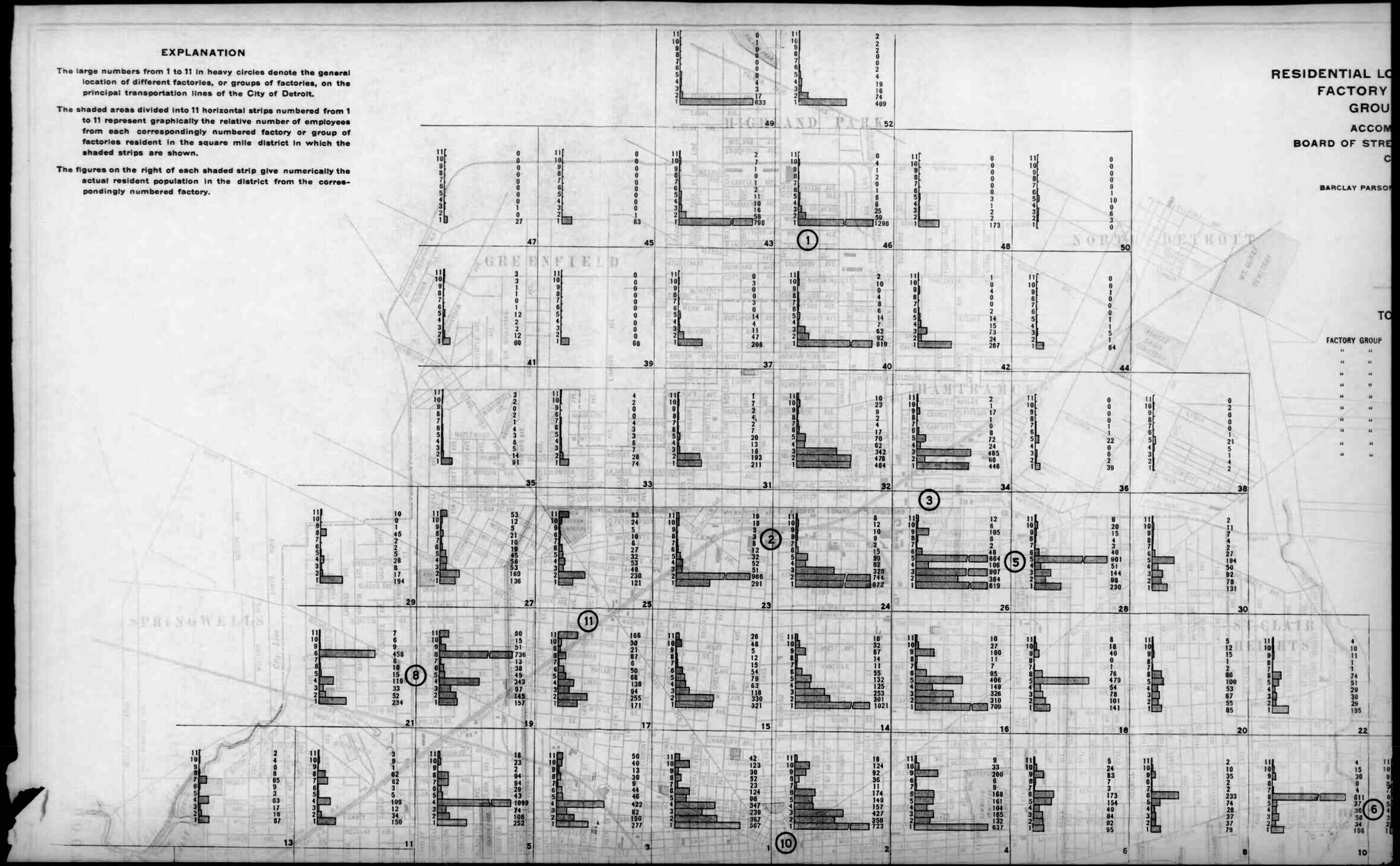
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

EXPLANATION

The large numbers from 1 to 11 in heavy circles denote the general location of different factories, or groups of factories, on the principal transportation lines of the City of Detroit.

The shaded areas divided into 11 horizontal strips numbered from 1 to 11 represent graphically the relative number of employees from each correspondingly numbered factory or group of factories resident in the square mile district in which the shaded strips are shown.

The figures on the right of each shaded strip give numerically the actual resident population in the district from the correspondingly numbered factory.



MAP 8

RESIDENTIAL LOCATION OF 45,611 DETROIT FACTORY WORKERS FROM 11 GROUPS OF FACTORIES

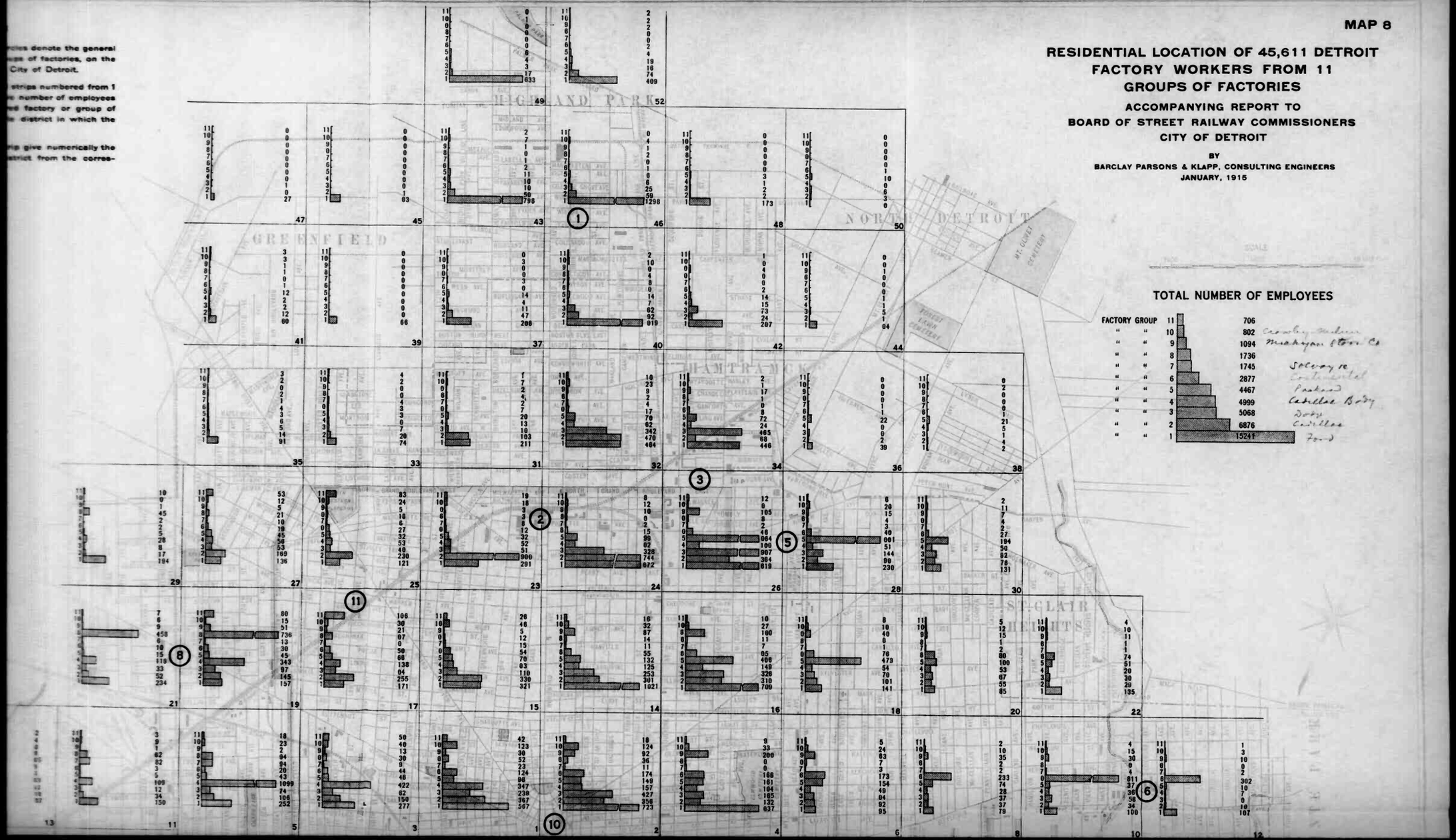
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

...cles denote the general ...ps of factories, on the City of Detroit.

... strips numbered from 1 ...e number of employees ...ed factory or group of ...e district in which the

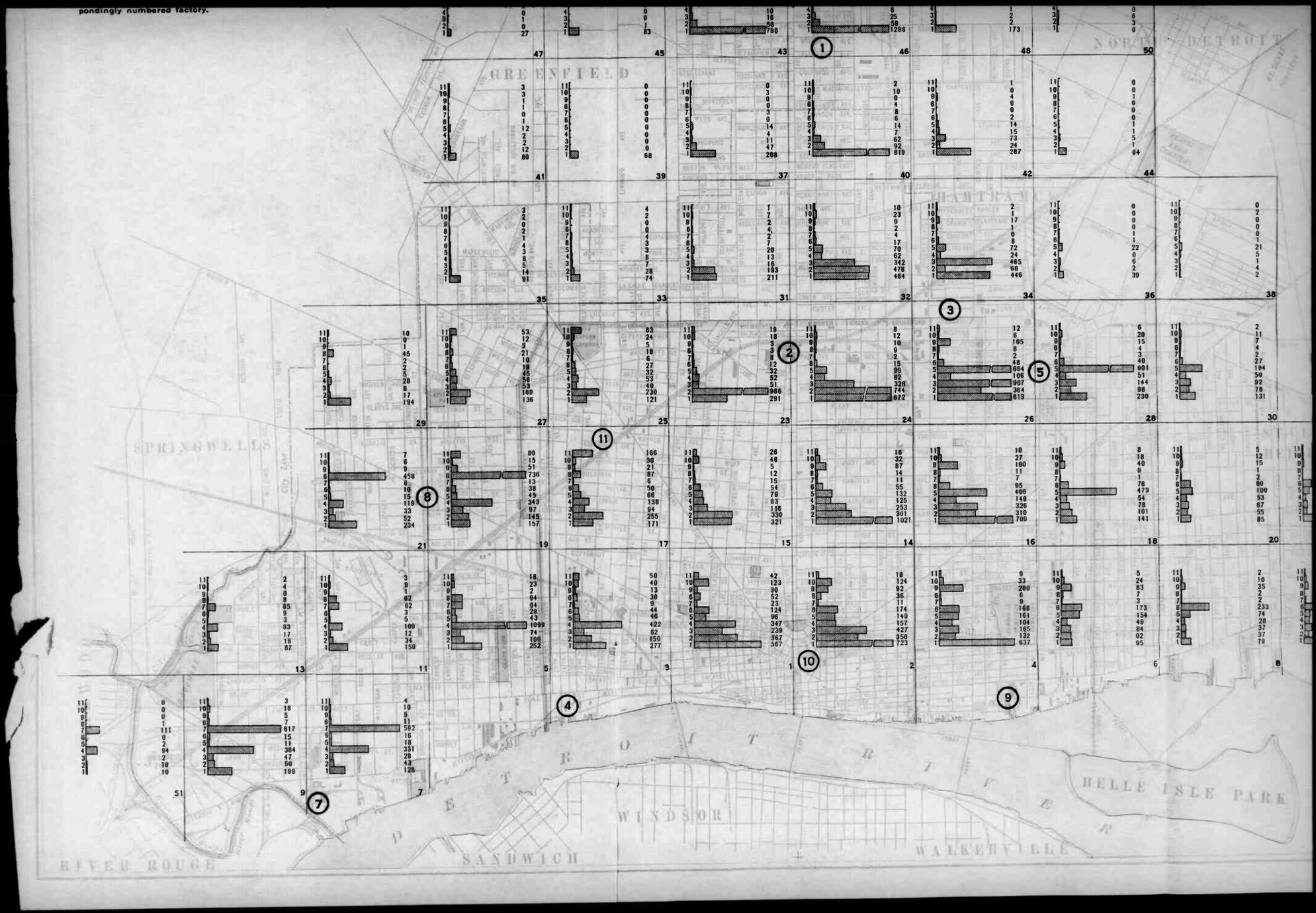
...ip give numerically the ...strict from the corres-

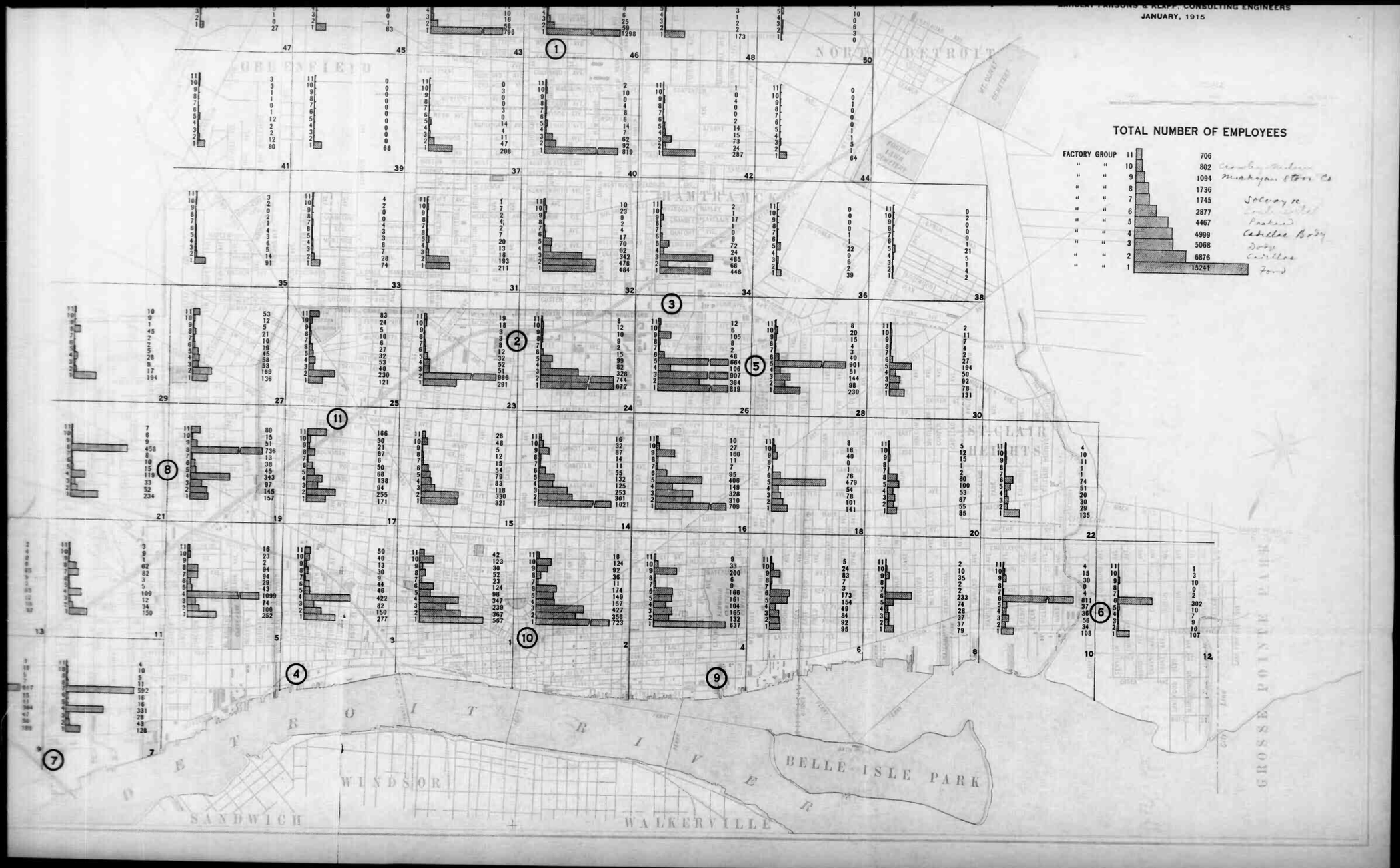


TOTAL NUMBER OF EMPLOYEES

FACTORY GROUP 11 706
" " 10 802 Cadillac Motor Co
" " 9 1094 Michigan Stove Co
" " 8 1736
" " 7 1745 Studebaker
" " 6 2877 Continental
" " 5 4467 Packard
" " 4 4999 Cadillac Motor
" " 3 5068 Dodge
" " 2 6876 Cadillac
" " 1 15241 Ford

pondingly numbered factory.




JANUARY, 1915
TOTAL NUMBER OF EMPLOYEES
FACTORY GROUP
706
802
1094
1736
1745
2877
4467
4999
5068
6876
15241
Ford
DETROIT
BELLE ISLE PARK
WINDSOR
SANDWICH
WALKERVILLE
GROSSE POINTE FARMS

REDUCTION RATIO 17:1

2.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13″x18″
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

1.8

2.0

2.2

2.5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

DIAGRAM 9

DIAGRAM OF MAXIMUM SCHEDULE CARS PER HOUR PRESENT ROUTING

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY

BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916

EXPLANATION

Number of city and interurban cars per hour, July 1913 schedule, 5 to 6 P. M., shown graphically by width of black bands and numerically by figures. Arrows indicate direction of cars.

DIAGRAM 9-A

DIAGRAM OF MAXIMUM SCHEDULE CARS PER HOUR PROPOSED REROUTING

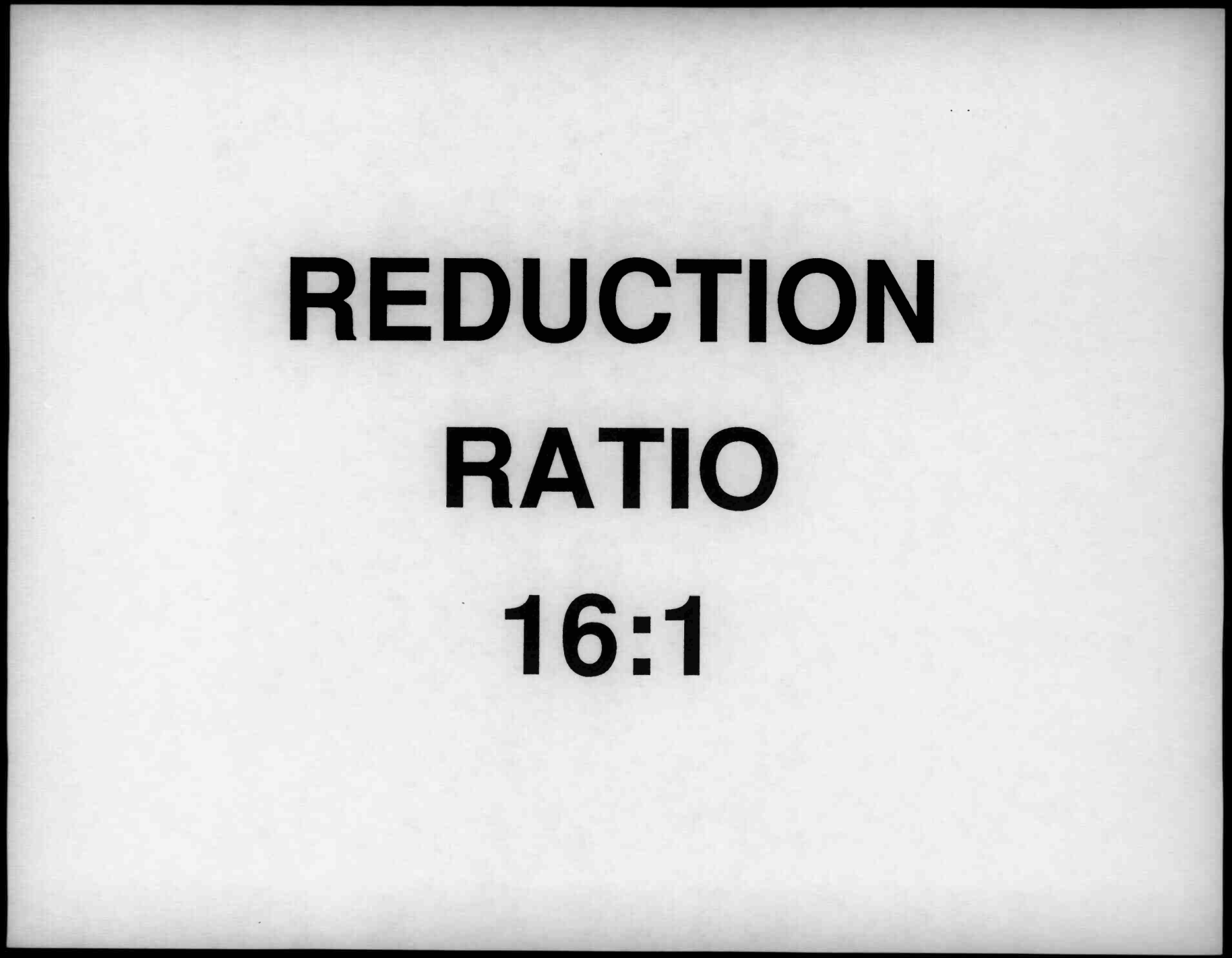
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY

BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916

EXPLANATION

The bands and figures show the same car service as on companion diagram when distributed to conform to proposed rerouted plan.


REDUCTION
RATIO
16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A5

A4

A3

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

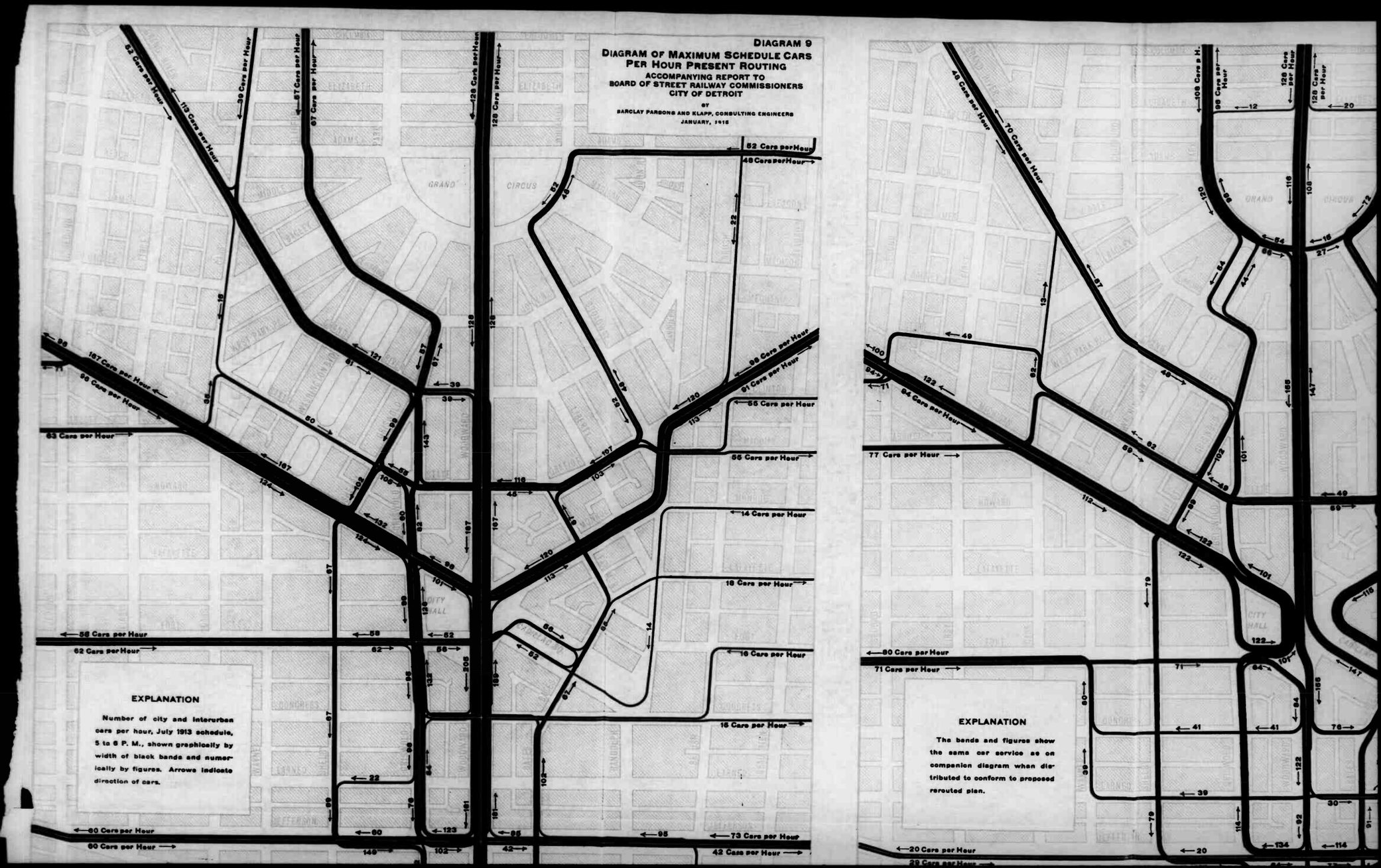


DIAGRAM 9
DIAGRAM OF MAXIMUM SCHEDULE CARS PER HOUR PRESENT ROUTING
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT
BY BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916
EXPLANATION
Number of city and interurban cars per hour, July 1913 schedule, 5 to 6 P. M., shown graphically by width of black bands and numerically by figures. Arrows indicate direction of cars.
EXPLANATION
The bands and figures show the same car service as on companion diagram when distributed to conform to proposed rerouted plan.
GRAND CIRCUS
CITY HALL

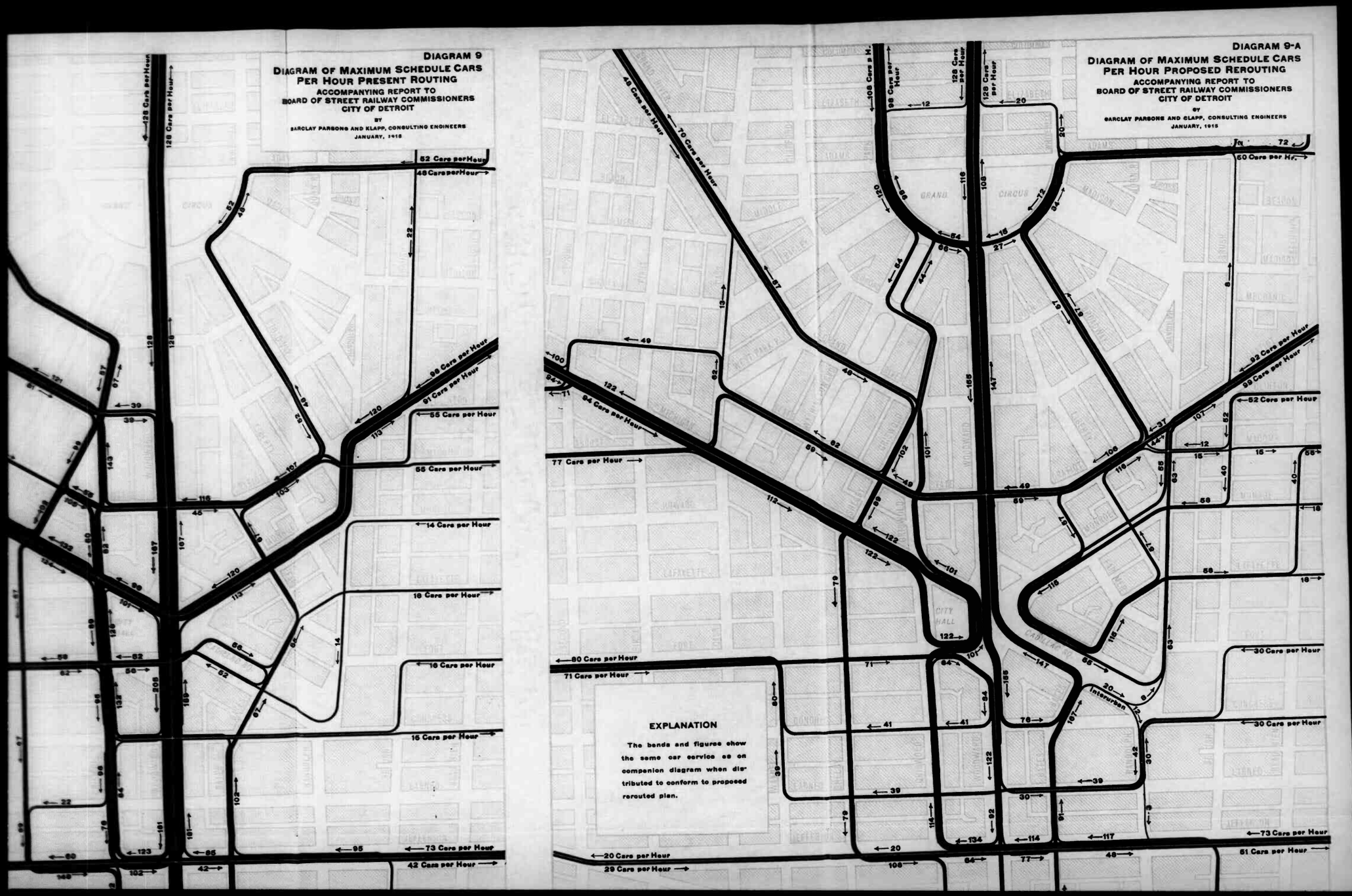
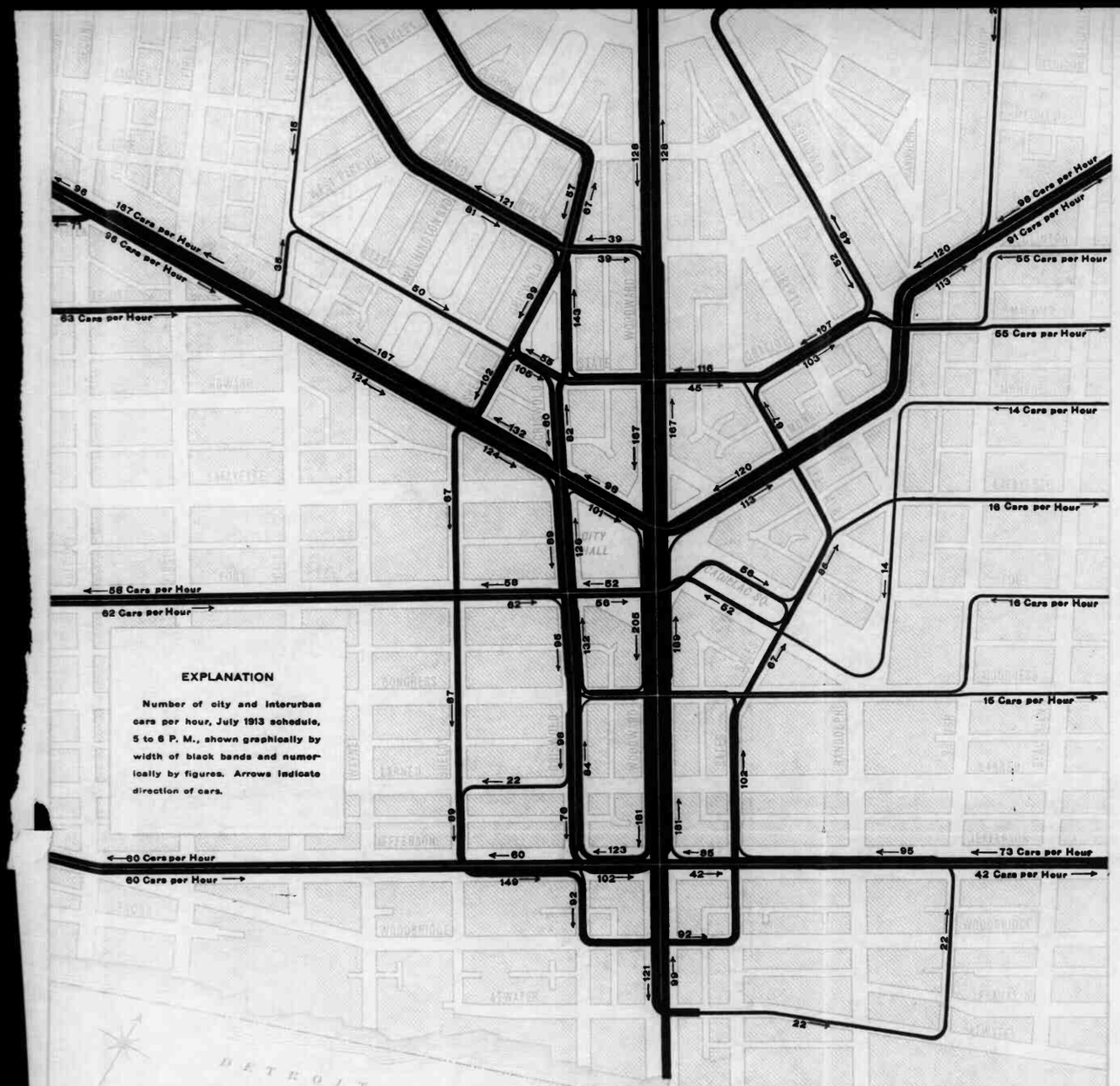
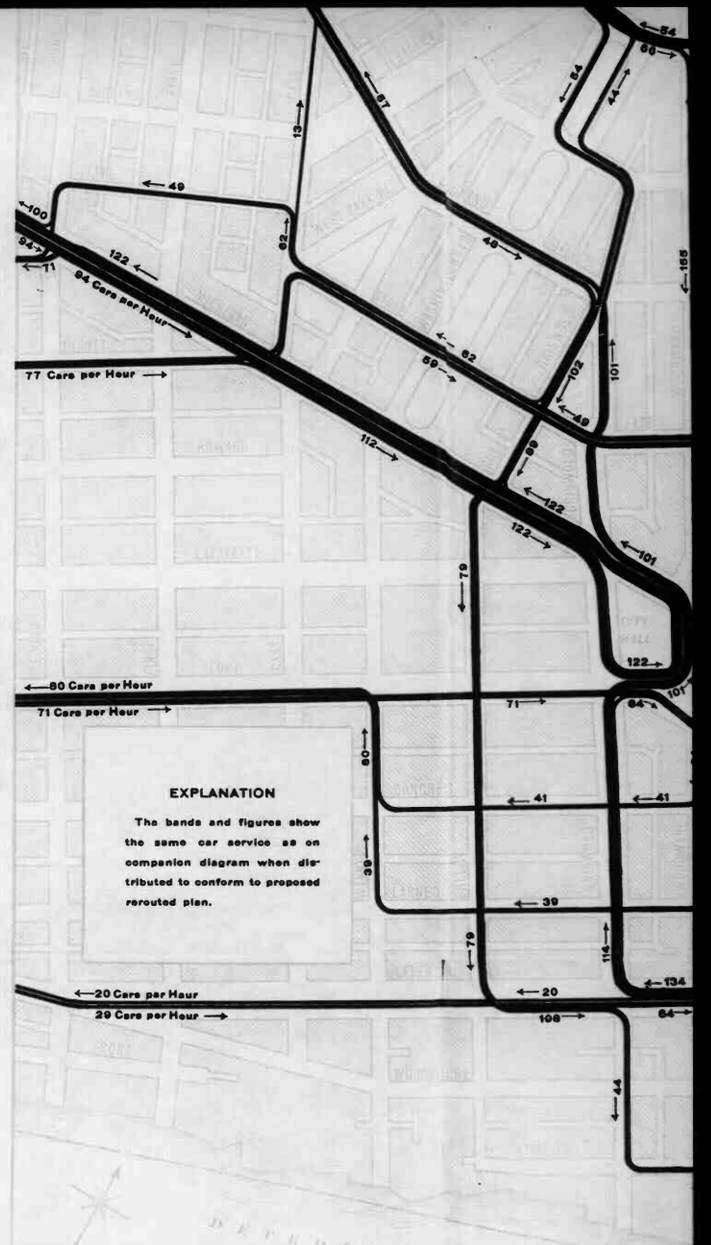
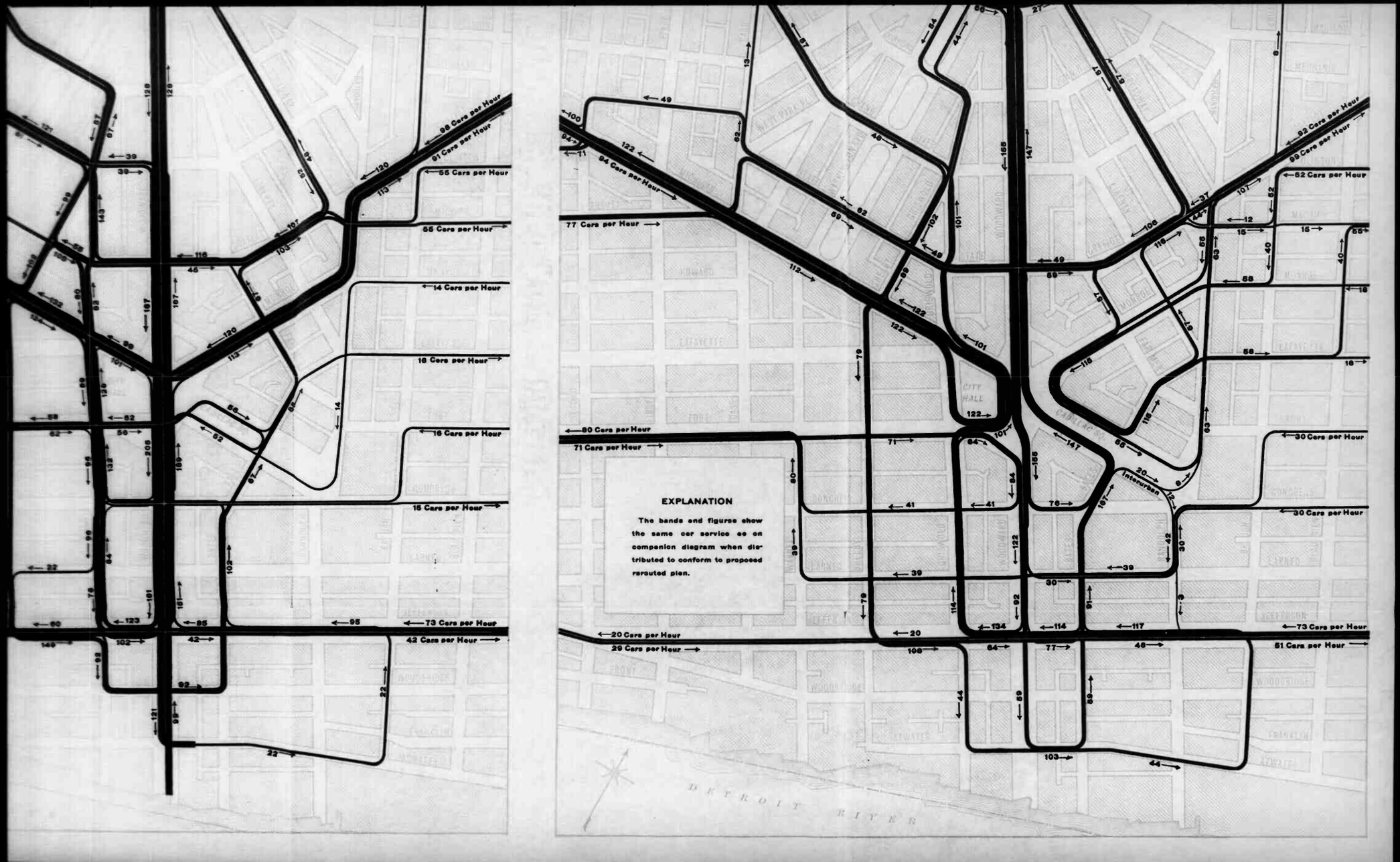


DIAGRAM 9
DIAGRAM OF MAXIMUM SCHEDULE CARS PER HOUR PRESENT ROUTING
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT
BY BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1918
DIAGRAM 9-A
DIAGRAM OF MAXIMUM SCHEDULE CARS PER HOUR PROPOSED REROUTING
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT
BY BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1918
EXPLANATION
The bends and figures show the same car service as on companion diagram when distributed to conform to proposed rerouted plan.
CIRCUS
GRAND
CITY HALL
CADILLAC
Interurban


EXPLANATION
Number of city and interurban cars per hour, July 1913 schedule, 5 to 6 P. M., shown graphically by width of black bands and numerically by figures. Arrows indicate direction of cars.
187 Cars per Hour
98 Cars per Hour
63 Cars per Hour
98 Cars per Hour
91 Cars per Hour
55 Cars per Hour
55 Cars per Hour
14 Cars per Hour
16 Cars per Hour
16 Cars per Hour
15 Cars per Hour
73 Cars per Hour
42 Cars per Hour
56 Cars per Hour
62 Cars per Hour
60 Cars per Hour
60 Cars per Hour
DETROIT RIVER


EXPLANATION
The bands and figures show the same car service as on companion diagram when distributed to conform to proposed rerouted plan.
94 Cars per Hour
77 Cars per Hour
80 Cars per Hour
71 Cars per Hour
20 Cars per Hour
29 Cars per Hour
DETROIT RIVER


EXPLANATION
The bands and figures show the same car service as on companion diagram when distributed to conform to proposed rerouted plan.
Interurban
DETROIT RIVER
CITY HALL
CADILLAC SQ.
WEST FORT ST.
WOODWARD
GRISWOLD
SHELBY
BRUSH
RANDOLPH
MONROE
LIBRARY
CAMPUS MARTIUS
WOODBRIDGE
ATWATER
RIVARD
CHRYSLER
98 Cars per Hour
91 Cars per Hour
55 Cars per Hour
14 Cars per Hour
16 Cars per Hour
16 Cars per Hour
15 Cars per Hour
73 Cars per Hour
42 Cars per Hour
94 Cars per Hour
77 Cars per Hour
80 Cars per Hour
71 Cars per Hour
20 Cars per Hour
29 Cars per Hour
92 Cars per Hour
88 Cars per Hour
52 Cars per Hour
30 Cars per Hour
30 Cars per Hour
73 Cars per Hour
51 Cars per Hour

REDUCTION RATIO 17:1

2.5 mm

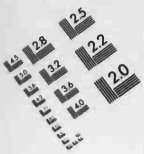
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

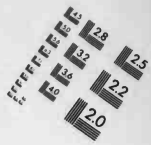
2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

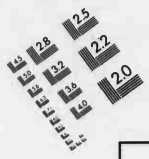
1.5 mm

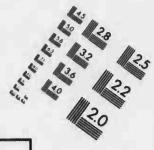
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

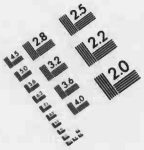


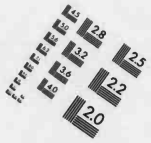


PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC





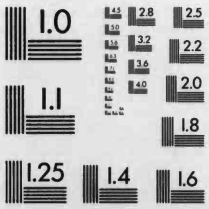




200 mm

150 mm

100 mm



ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

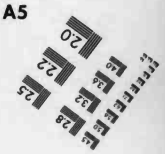
1.0 mm

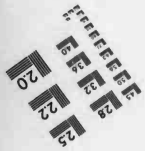
1.5 mm

2.0 mm

2.5 mm

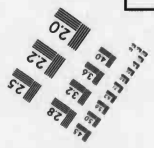
A5

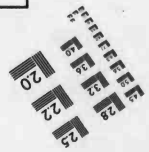




A4

A3

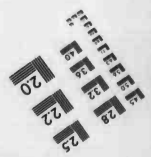




PRECISION[SM] RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119



ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

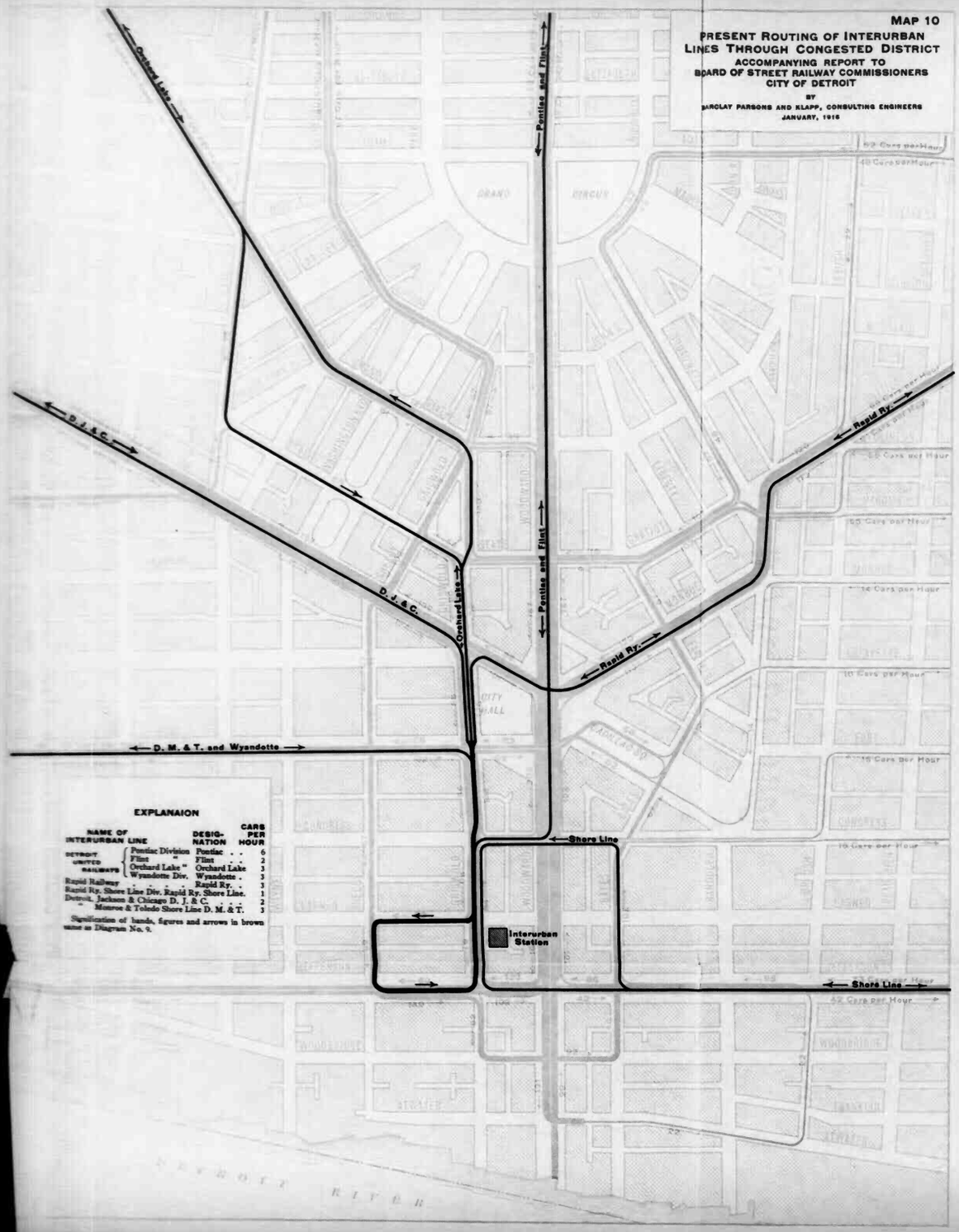
3.0 mm

MAP 10

PRESENT ROUTING OF INTERURBAN LINES THROUGH CONGESTED DISTRICT

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916



EXPLANAION

NAME OF INTERURBAN LINE		DESIGNATION	CARS PER HOUR
DETROIT UNITED RAILWAYS	Pontiac Division	Pontiac	6
	Flint "	Flint	2
	Orchard Lake "	Orchard Lake	3
	Wyandotte Div.	Wyandotte	3
Rapid Railway		Rapid Ry.	3
Rapid Ry. Shore Line Div. Rapid Ry. Shore Line.			1
Detroit, Jackson & Chicago D. J. & C.			2
" Monroe & Toledo Shore Line D. M. & T.			3

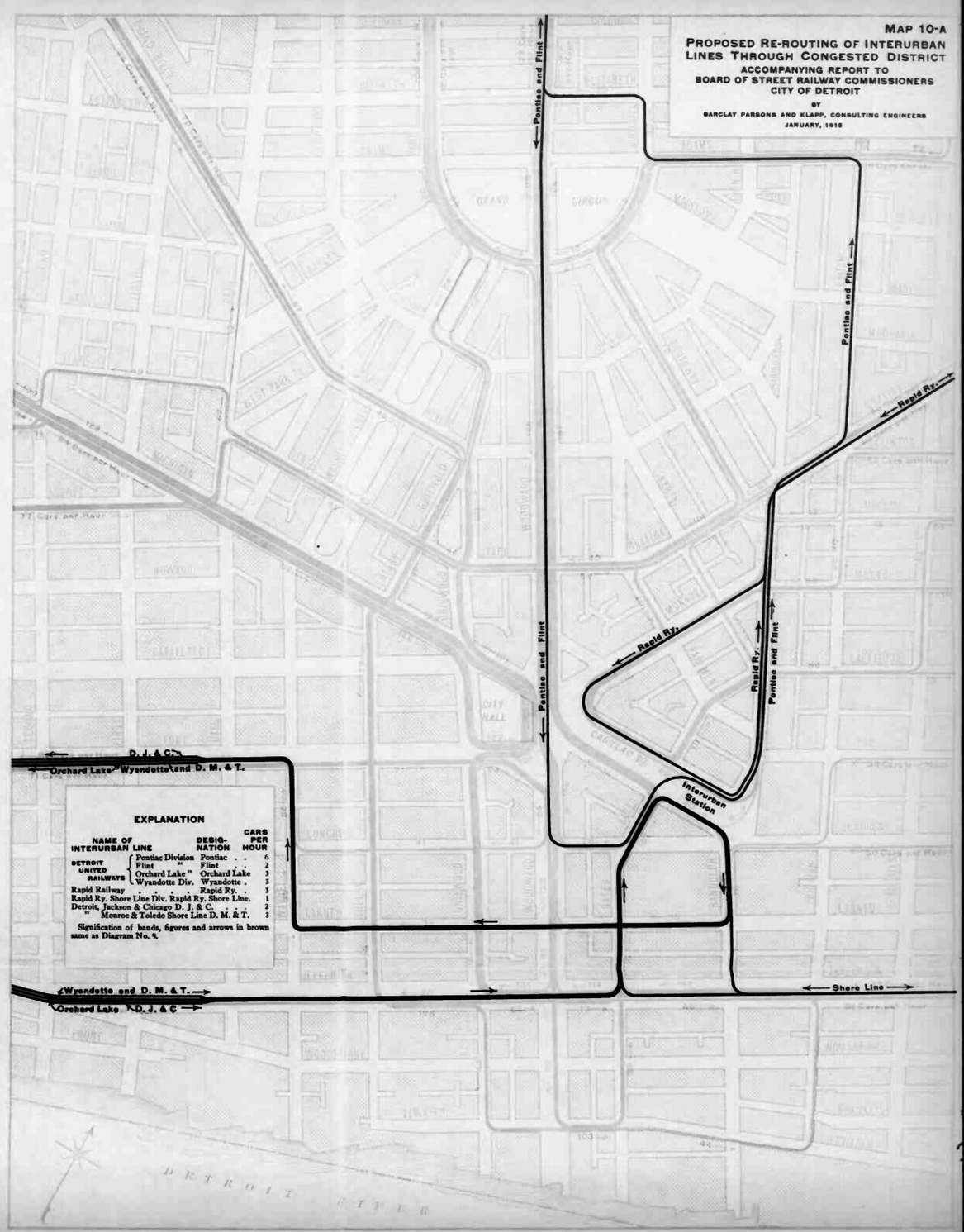
Signification of bands, figures and arrows in brown same as Diagram No. 9.

MAP 10-A

PROPOSED RE-ROUTING OF INTERURBAN LINES THROUGH CONGESTED DISTRICT

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916



EXPLANATION

NAME OF INTERURBAN LINE		DESIGNATION	CARS PER HOUR
DETROIT UNITED RAILWAYS	Pontiac Division	Pontiac	6
	Flint "	Flint	2
	Orchard Lake "	Orchard Lake	3
	Wyandotte Div.	Wyandotte	3
Rapid Railway		Rapid Ry.	3
Rapid Ry. Shore Line Div. Rapid Ry. Shore Line.			1
Detroit, Jackson & Chicago D. J. & C.			2
" Monroe & Toledo Shore Line D. M. & T.			3

Signification of bands, figures and arrows in brown same as Diagram No. 9.

REDUCTION RATIO 16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

2.8

3.2

3.6

4.0

2.5

2.2

2.0

1.8

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

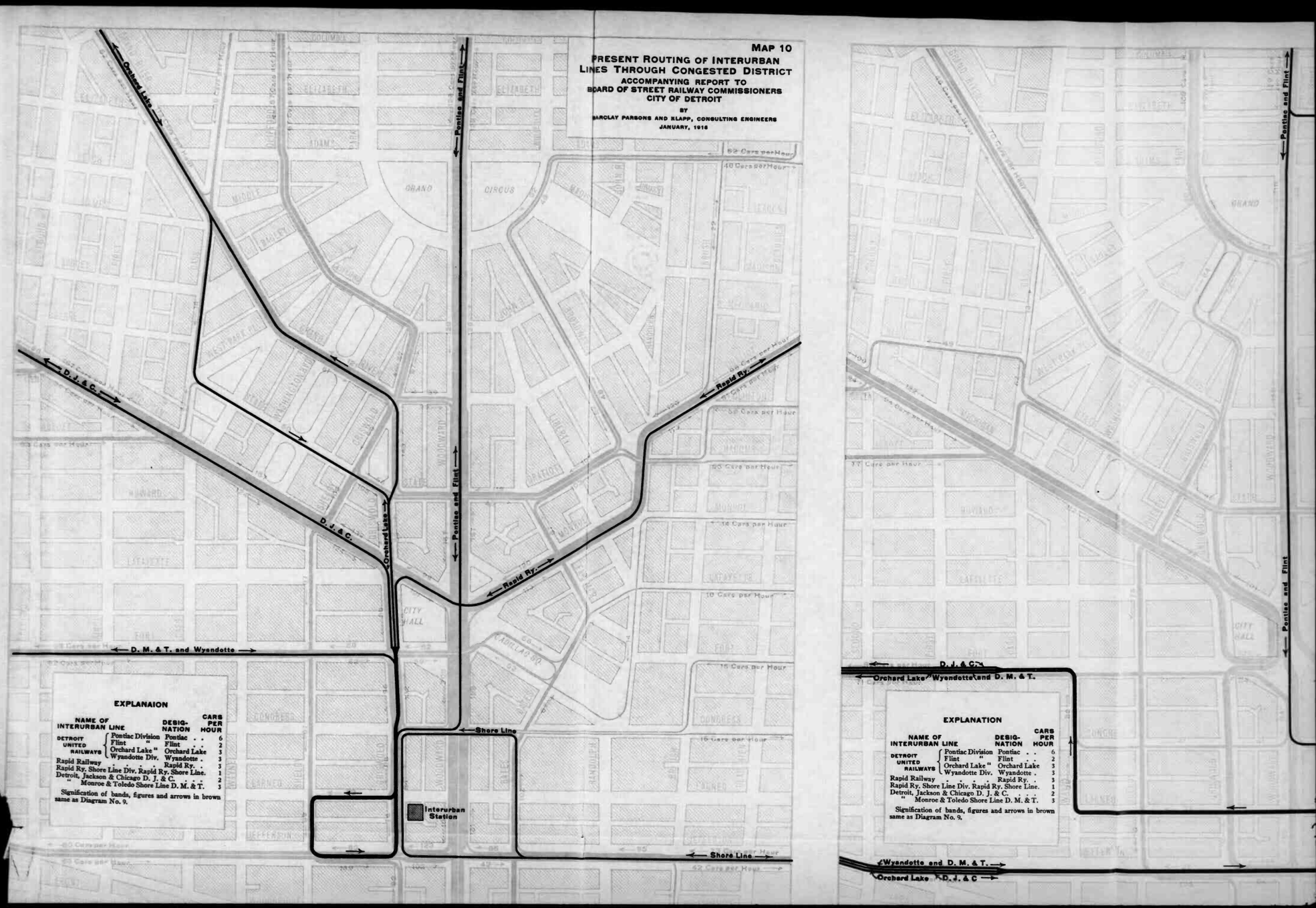
4.5 mm

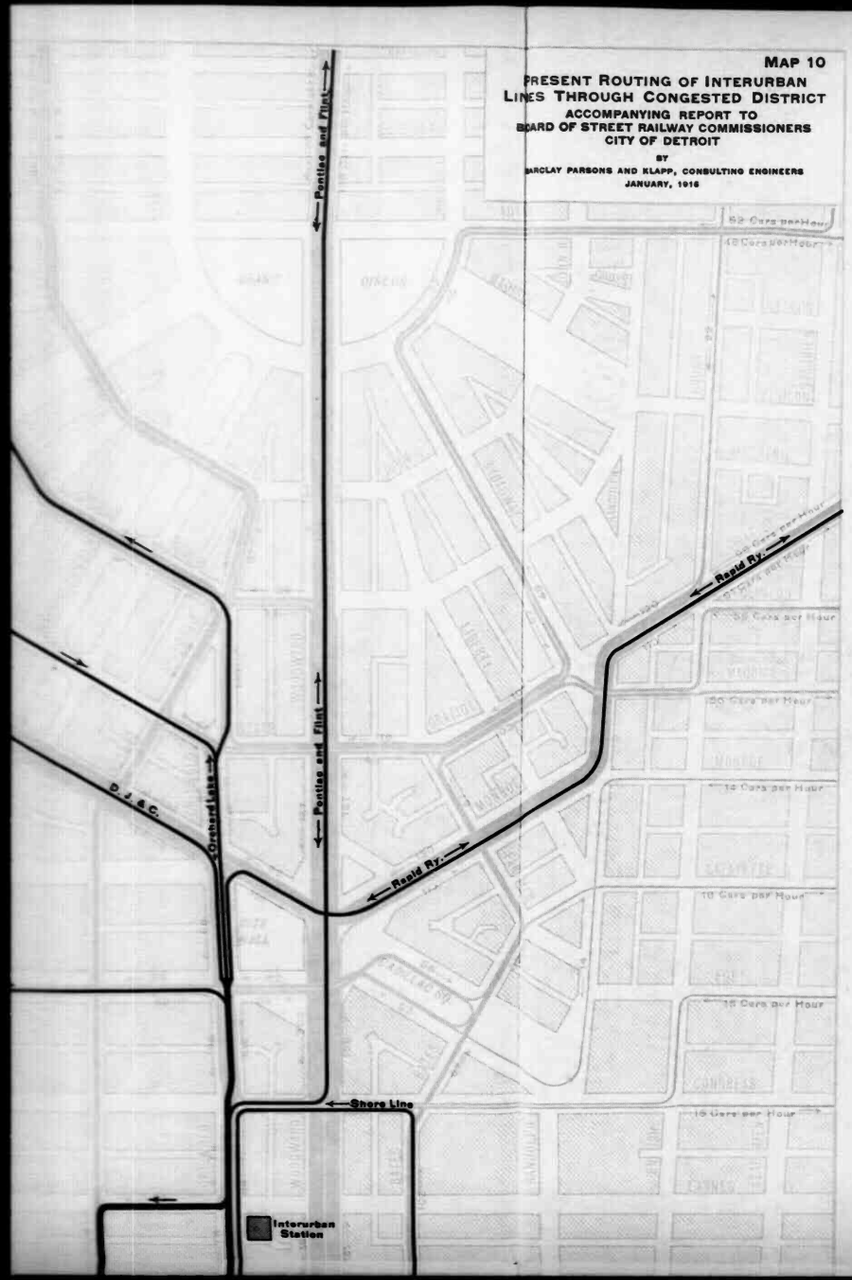
3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890


MAP 10
PRESENT ROUTING OF INTERURBAN LINES THROUGH CONGESTED DISTRICT
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT
BY BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916
Orchard Lake
Pontiac and Flint
D. J. & C.
Rapid Ry.
D. M. & T. and Wyandotte
Shore Line
Interurban Station
EXPLANAION
NAME OF INTERURBAN LINE
DESIGNATION
CARS PER HOUR
DETROIT UNITED RAILWAYS
Pontiac Division Pontiac . . 6
Flint " Flint . . 2
Orchard Lake " Orchard Lake 3
Wyandotte Div. Wyandotte . 3
Rapid Railway . . . Rapid Ry. . 3
Rapid Ry. Shore Line Div. Rapid Ry. Shore Line. 1
Detroit, Jackson & Chicago D. J. & C. . . . 2
" Monroe & Toledo Shore Line D. M. & T. 3
Signification of bands, figures and arrows in brown same as Diagram No. 9.
EXPLANATION
Orchard Lake and D. M. & T.
Wyandotte and D. M. & T.



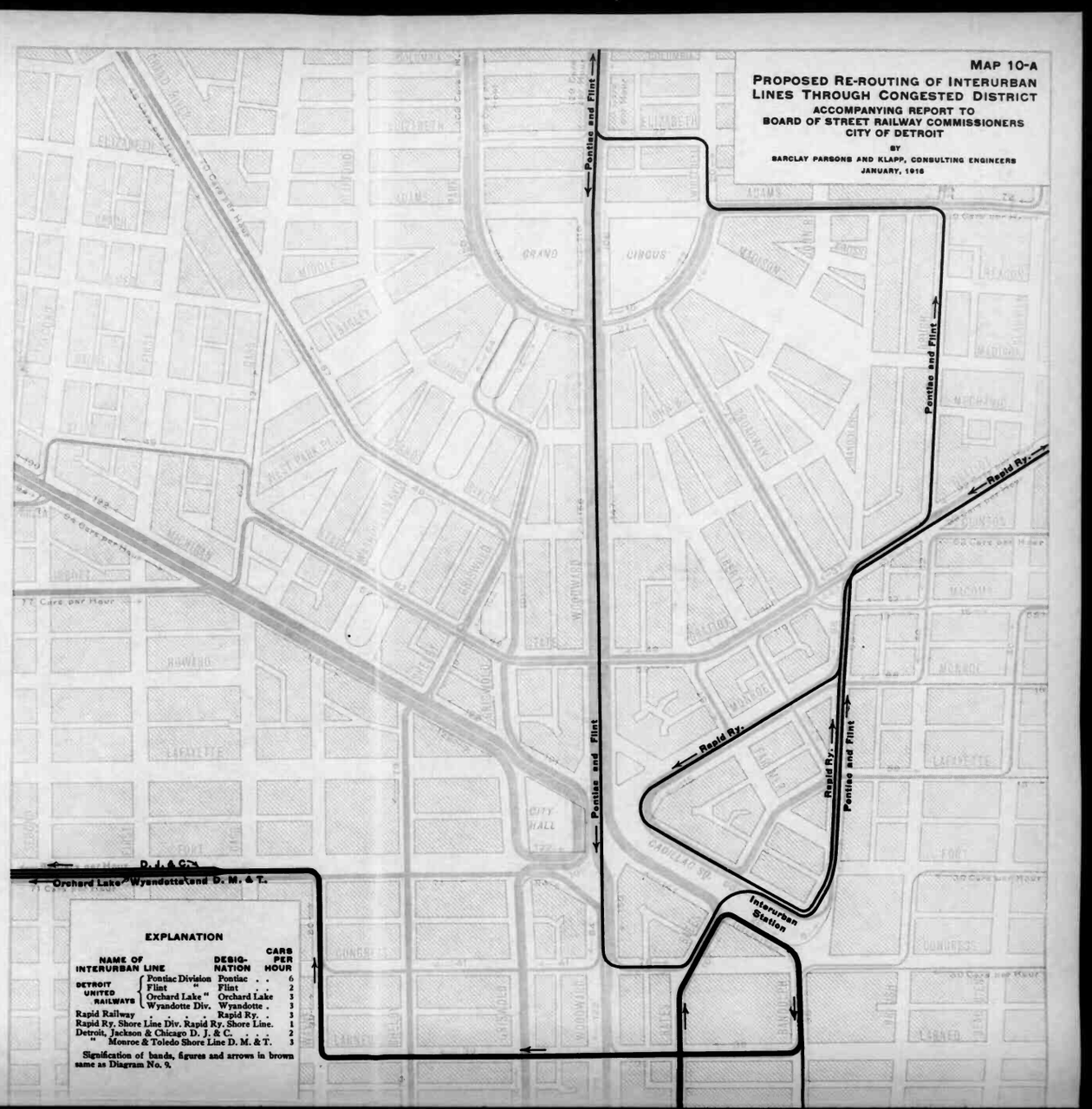
MAP 10

PRESENT ROUTING OF INTERURBAN LINES THROUGH CONGESTED DISTRICT

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY

BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916



MAP 10-A

PROPOSED RE-ROUTING OF INTERURBAN LINES THROUGH CONGESTED DISTRICT

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

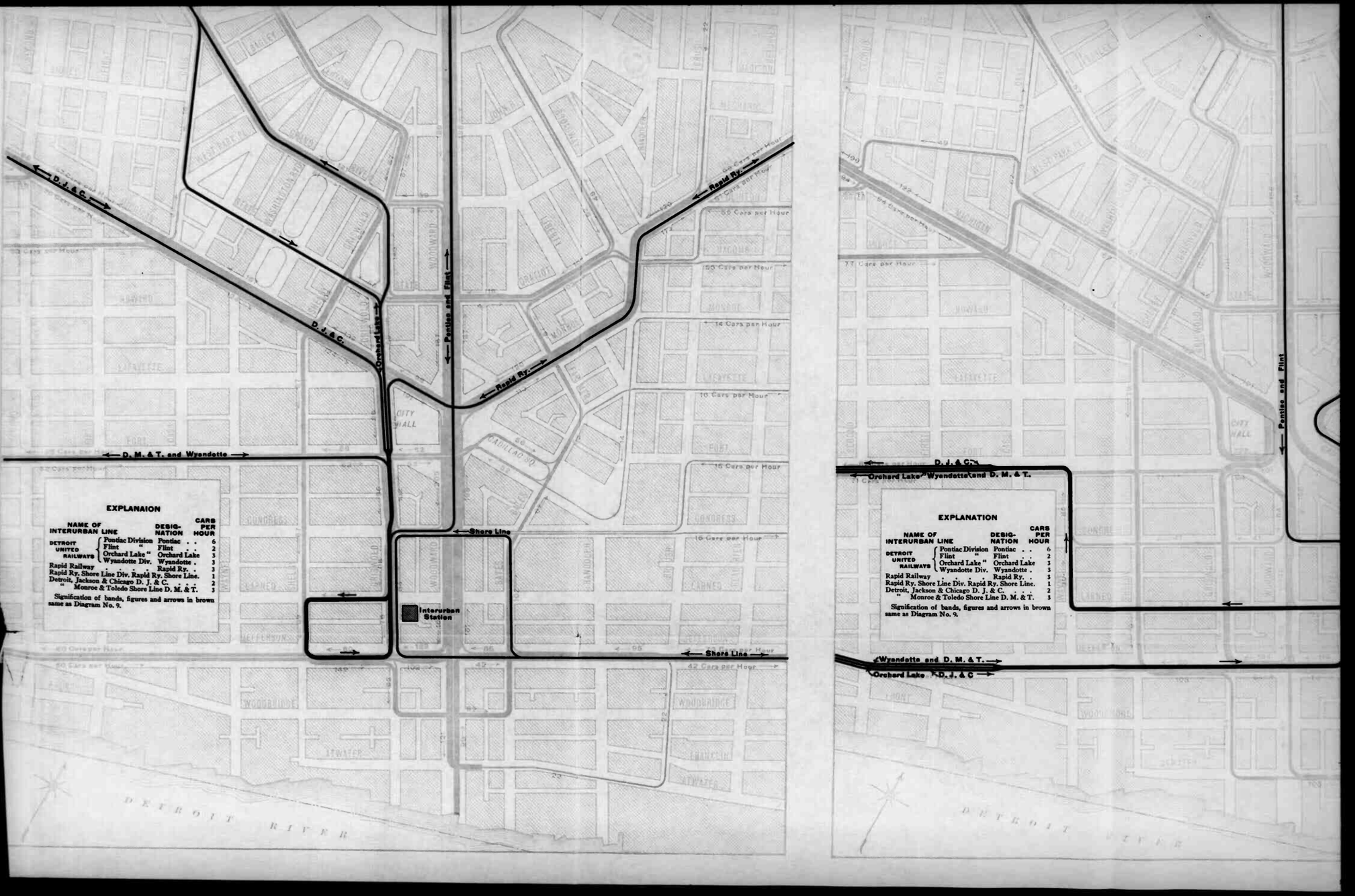
BY

BARCLAY PARSONS AND KLAPP, CONSULTING ENGINEERS
JANUARY, 1916

EXPLANATION

NAME OF INTERURBAN LINE		DESIGNATION	CARS PER HOUR
DETROIT UNITED RAILWAYS	Pontiac Division	Pontiac . .	6
	Flint "	Flint . .	2
	Orchard Lake "	Orchard Lake	3
	Wyandotte Div.	Wyandotte .	3
Rapid Railway . . .		Rapid Ry. .	3
Rapid Ry. Shore Line Div.		Rapid Ry. Shore Line.	1
Detroit, Jackson & Chicago		D. J. & C. . . .	2
" Monroe & Toledo Shore Line		D. M. & T.	3

Signification of bands, figures and arrows in brown same as Diagram No. 9.



EXPLANAION

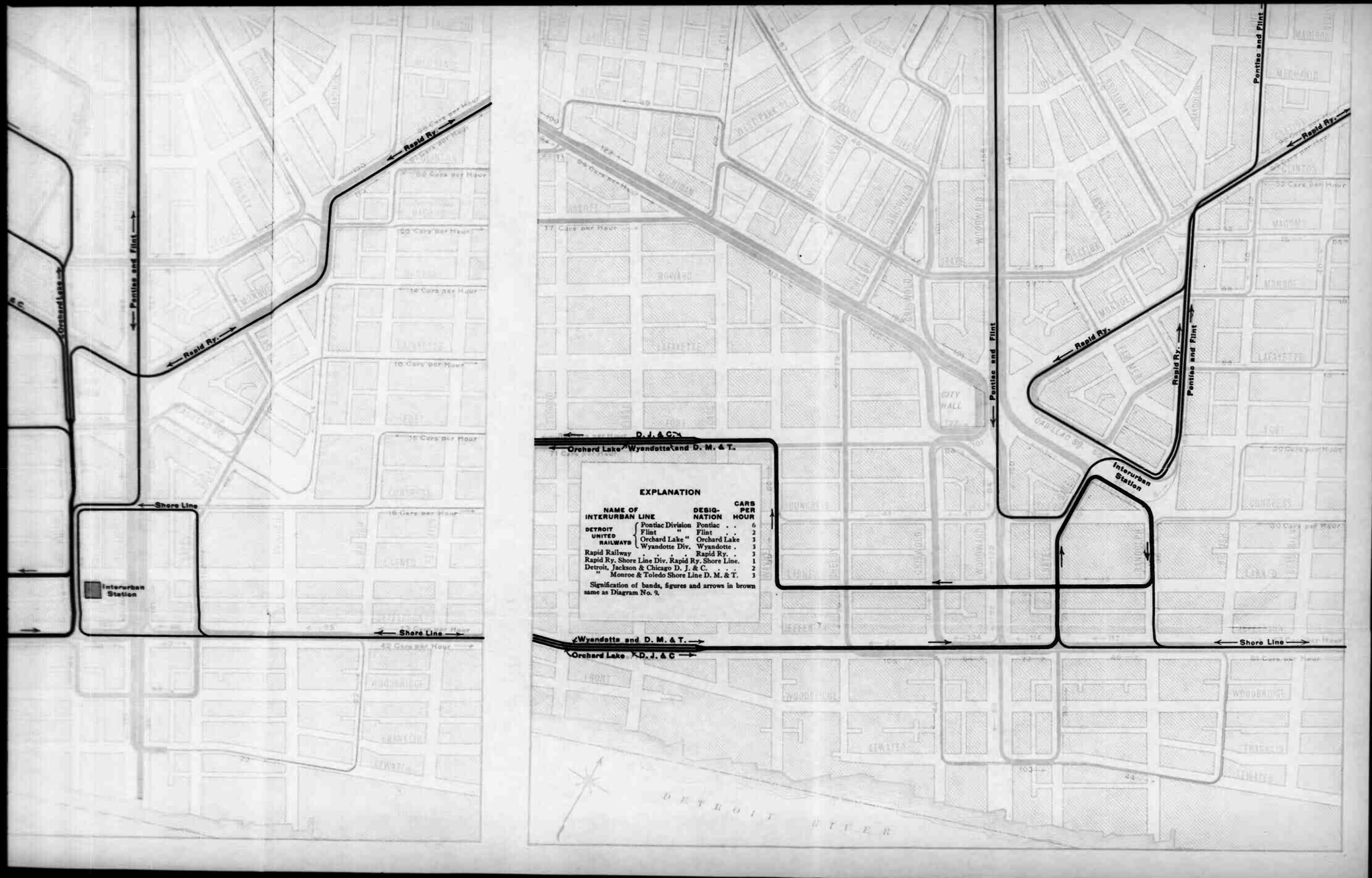
NAME OF INTERURBAN LINE		DESIGNATION	CARS PER HOUR
DETROIT UNITED RAILWAYS	Pontiac Division	Pontiac	6
	Flint "	Flint	2
	Orchard Lake "	Orchard Lake	3
	Wyandotte Div.	Wyandotte	3
Rapid Railway		Rapid Ry.	3
Rapid Ry. Shore Line Div.		Rapid Ry. Shore Line.	1
Detroit, Jackson & Chicago		D. J. & C.	2
" Monroe & Toledo Shore Line		D. M. & T.	3

Signification of bands, figures and arrows in brown same as Diagram No. 9.

EXPLANATION

NAME OF INTERURBAN LINE		DESIGNATION	CARS PER HOUR
DETROIT UNITED RAILWAYS	Pontiac Division	Pontiac	6
	Flint "	Flint	2
	Orchard Lake "	Orchard Lake	3
	Wyandotte Div.	Wyandotte	3
Rapid Railway		Rapid Ry.	3
Rapid Ry. Shore Line Div.		Rapid Ry. Shore Line.	1
Detroit, Jackson & Chicago		D. J. & C.	2
" Monroe & Toledo Shore Line		D. M. & T.	3

Signification of bands, figures and arrows in brown same as Diagram No. 9.


Rapid Ry.
Pontiac and Flint
Orchard Lake
Shore Line
Interurban Station
D. J. & C.
Orchard Lake
Wyandotte and D. M. & T.
Rapid Ry.
Pontiac and Flint
Interurban Station
Shore Line
Wyandotte and D. M. & T.
Orchard Lake
D. J. & C
DETROIT RIVER
EXPLANATION
NAME OF INTERURBAN LINE
DESIGNATION
CARS PER HOUR
DETROIT UNITED RAILWAYS
Pontiac Division Pontiac . . 6
Flint " Flint . . 2
Orchard Lake " Orchard Lake 3
Wyandotte Div. Wyandotte . 3
Rapid Railway Rapid Ry. . 3
Rapid Ry. Shore Line Div. Rapid Ry. Shore Line. 1
Detroit, Jackson & Chicago D. J. & C. . . . 2
" Monroe & Toledo Shore Line D. M. & T. 3
Signification of bands, figures and arrows in brown same as Diagram No. 9.

REDUCTION

RATIO

17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

1.8

2.0

2.2

2.5

2.8

3.2

3.6

4.0

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

MAP 11

WOODWARD AVENUE SUBWAY
AND
CONNECTING SURFACE LINES

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

EXPLANATION

Subway and subway station.

Surface routes to be operated as subway feeder lines.

Surface routes transfering to subway feeder lines.

No surface transfer lines south of Forest Avenue are shown on this map.

Additional stations above Grand Circus to be located as determined by conditions obtaining at the time the subway is constructed.

PONTIAC & FLINT INTERURBAN

SUBWAY TRACKS TO BE BROUGHT TO SURFACE AND LOOPED WHERE TERMINAL PROPERTY IS AVAILABLE.

VICTOR STATION

LINE

MAIN

DETROIT & NORTHWESTERN INTERURBAN

SUBWAY

BALTIMORE STATION

TRACK

HANCOCK STATION

DOUBLE

GRAND CIRCUS STATION

ALTERNATE DESIGN CALLS FOR PORTAL AT THIS POINT.

GRAND RIVER STATION

CITY HALL STATION

CONGRESS STATION

JEFFERSON STATION

SINGLE TRACK SUBWAY
SOUTHERN TERMINAL LOOP

GREENFIELD

NORTH DETROIT

MT. OLIVET CEMETERY

HIGHLAND PARK CEMETERY

SPRINGWELLS

ST. CLAIR HEIGHTS

GROSSE POINTE PARK

OAKWOOD

RIVER ROUGE

DETROIT RIVER

WINDSOR

SANDWICH

WALKERVILLE

BELLE ISLE PARK

REDUCTION

RATIO

16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

2.0

2.2

2.5

2.8

3.2

3.6

4.0

1.8

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

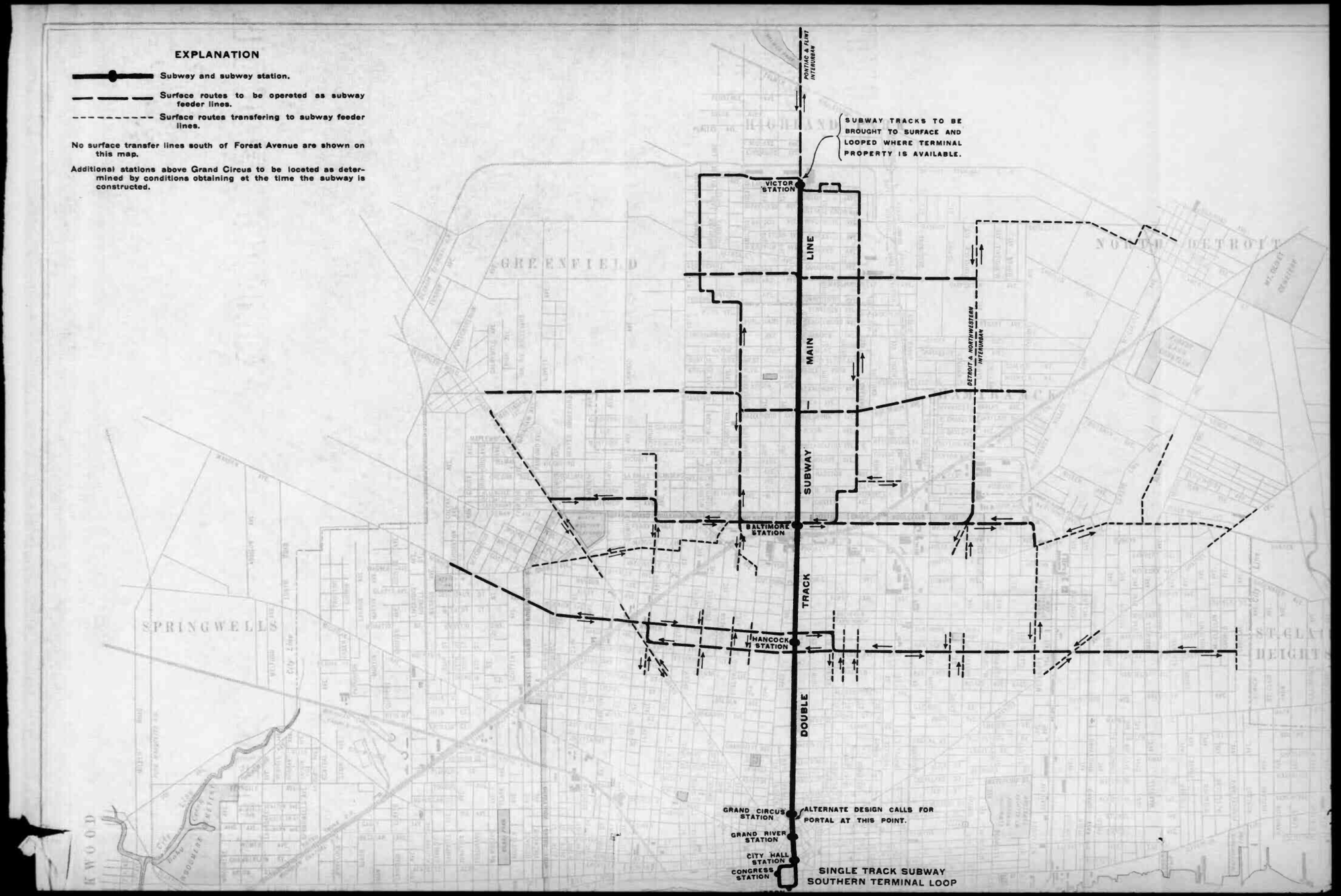
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

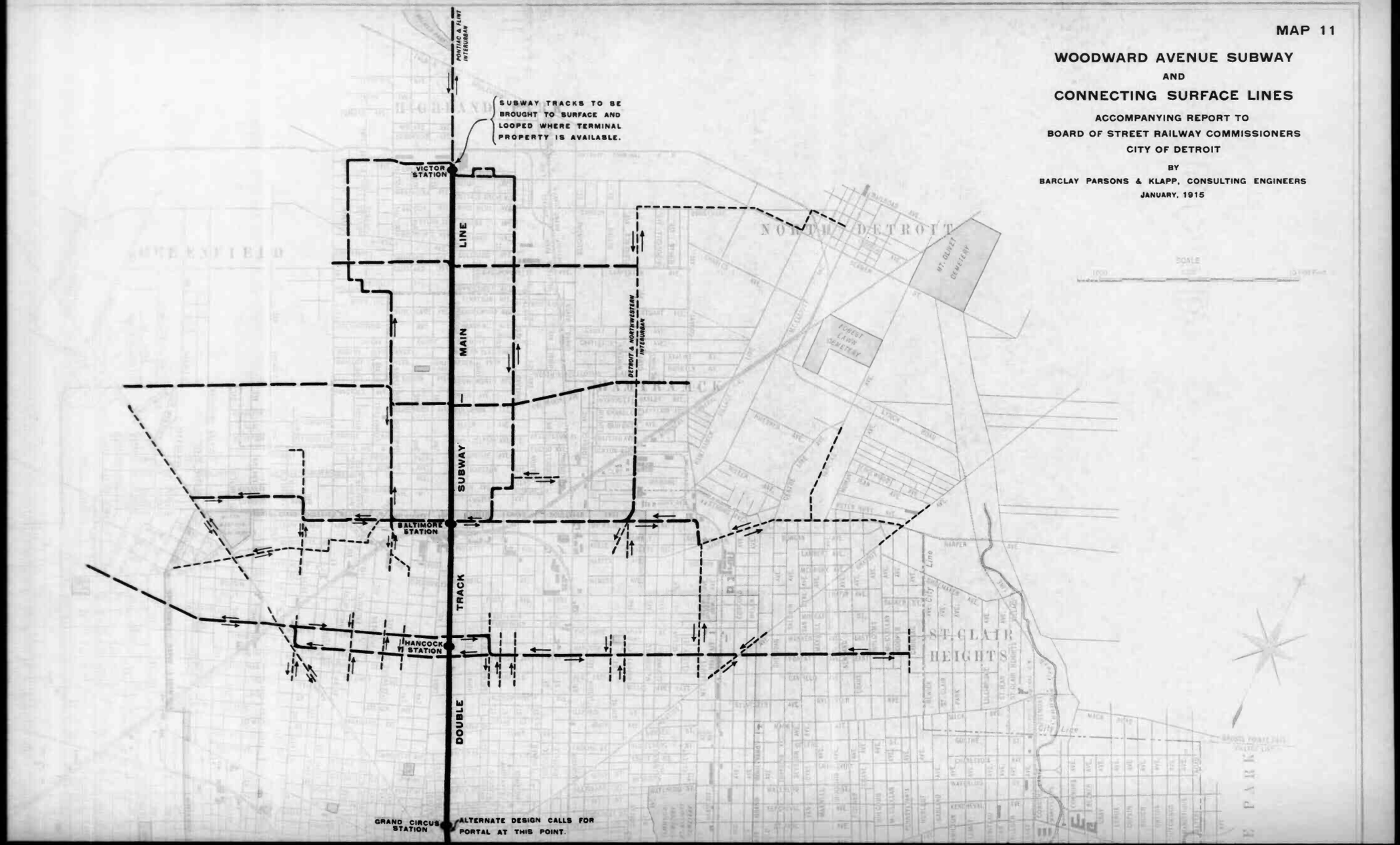
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

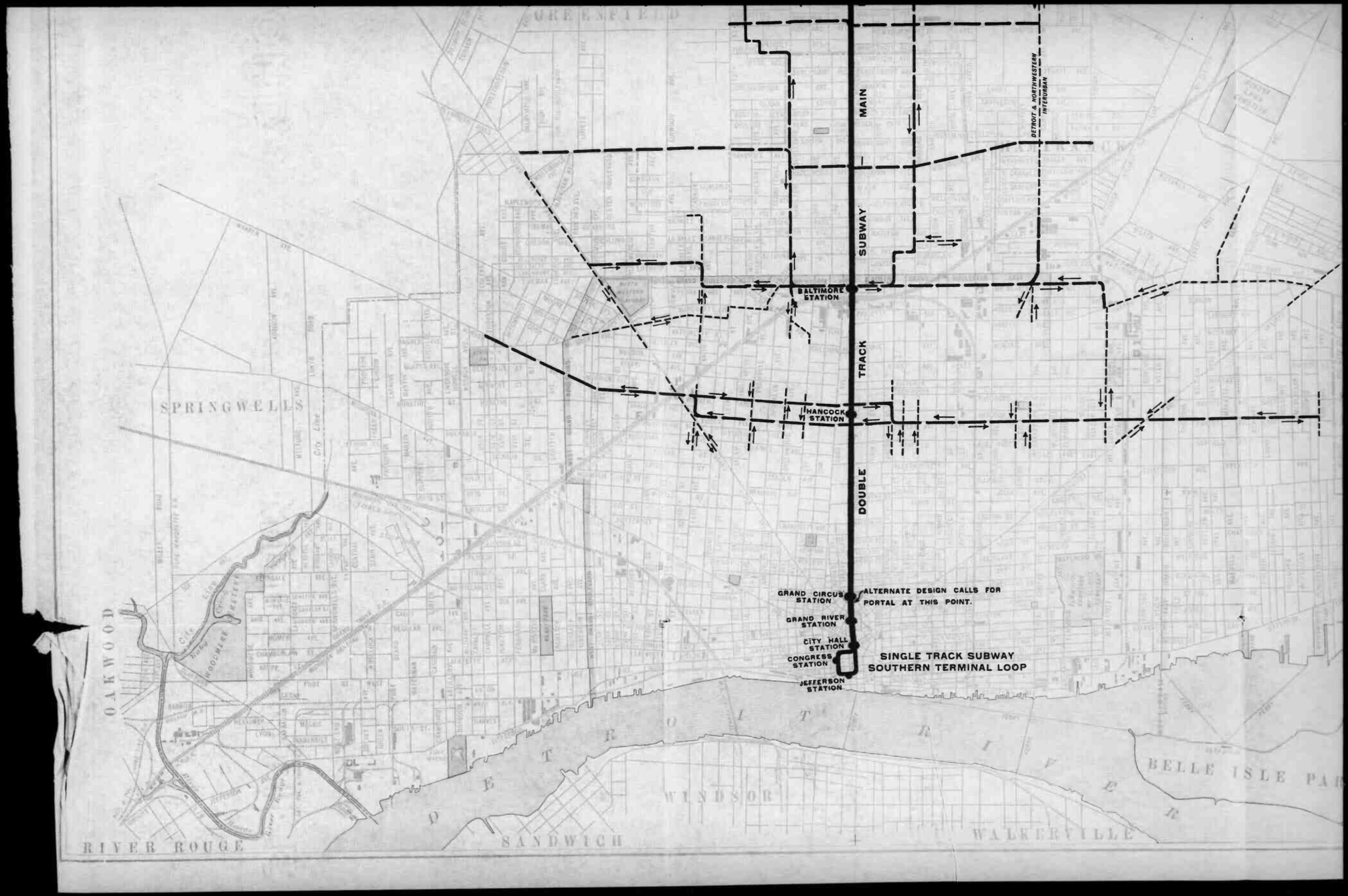

EXPLANATION
Subway and subway station.
Surface routes to be operated as subway feeder lines.
Surface routes transfering to subway feeder lines.
No surface transfer lines south of Forest Avenue are shown on this map.
Additional stations above Grand Circus to be located as determined by conditions obtaining at the time the subway is constructed.
PONTIAC & FLINT INTERURBAN
SUBWAY TRACKS TO BE BROUGHT TO SURFACE AND LOOPED WHERE TERMINAL PROPERTY IS AVAILABLE.
VICTOR STATION
LINE
MAIN
SUBWAY
DETROIT & NORTHWESTERN INTERURBAN
BALTIMORE STATION
TRACK
HANCOCK STATION
DOUBLE
GRAND CIRCUS STATION
ALTERNATE DESIGN CALLS FOR PORTAL AT THIS POINT.
GRAND RIVER STATION
CITY HALL STATION
CONGRESS STATION
SINGLE TRACK SUBWAY
SOUTHERN TERMINAL LOOP
GREENFIELD
SPRINGWELLS
NORTH DETROIT
HIGHLAND PARK

MAP 11

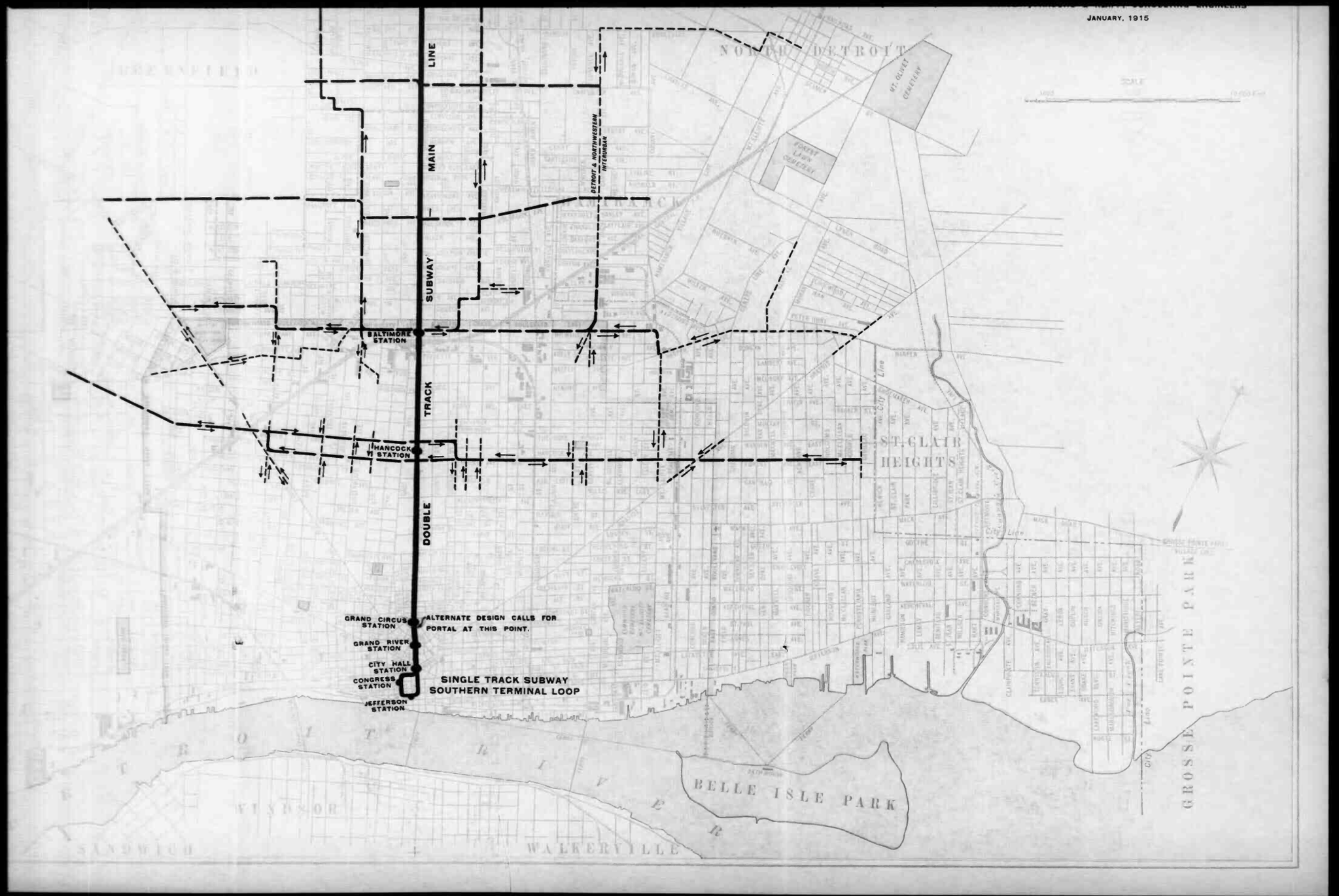
WOODWARD AVENUE SUBWAY
AND
CONNECTING SURFACE LINES

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915




MAIN
SUBWAY
TRACK
DOUBLE
DETROIT & NORTHWESTERN INTERURBAN
BALTIMORE STATION
HANCOCK STATION
GRAND CIRCUS STATION
ALTERNATE DESIGN CALLS FOR PORTAL AT THIS POINT.
GRAND RIVER STATION
CITY HALL STATION
CONGRESS STATION
JEFFERSON STATION
SINGLE TRACK SUBWAY
SOUTHERN TERMINAL LOOP
SPRINGWELLS
OAKWOOD
RIVER ROUGE
SANDWICH
WINDSOR
WALKERVILLE
DETROIT RIVER
BELLE ISLE PARK

JANUARY, 1915



REDUCTION RATIO 17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

2.5

2.2

2.0

1.8

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PLAN 12

WOODWARD AVENUE SUBWAY SOUTHERN TERMINAL LOOP AND MAIN LINE TO BAGG STREET

INCLUDING NEW SEWERS

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY

BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS

JANUARY, 1915

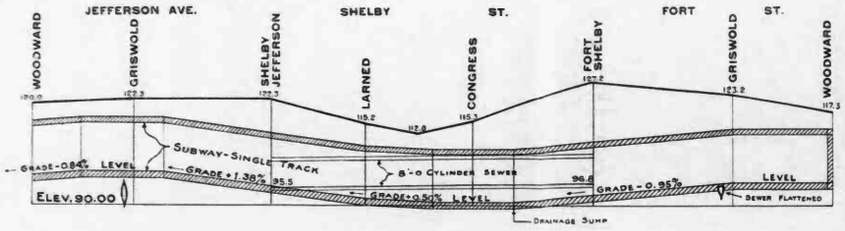
VERTICAL SCALE 5 10 20 30 40 50 60 Feet

HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet

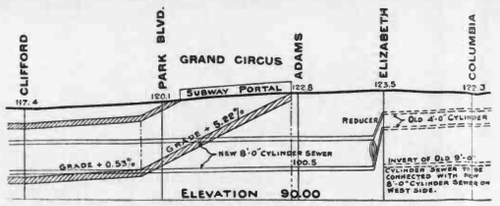
EXPLANATION

PLAN	PROFILE
Outside lines of subway.	Subway.
Subway stations.	New Sewer.
New sewer construction.	Profile shows east side sewers only.
Old sewers unchanged.	
Manholes.	
N. C. New Sewer Connections.	

Note:—Station locations shown are fixed by traffic conditions; additional stations above Grand Circus to be located as determined by conditions obtaining at the time the subway is constructed.



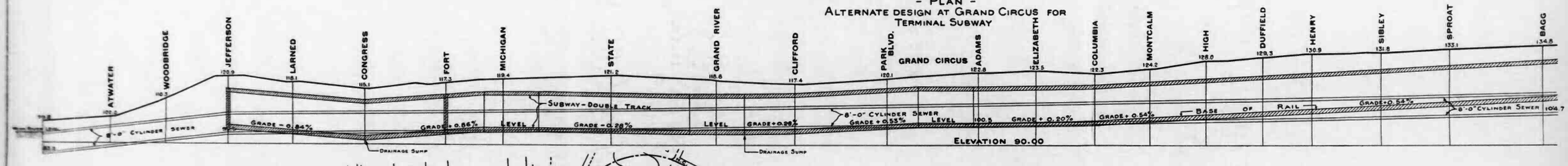
PROFILE OF LOOP



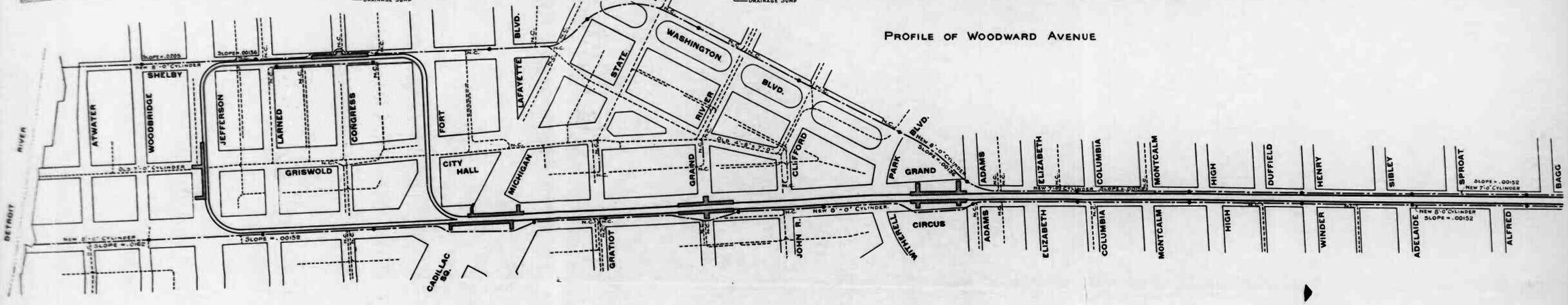
– PROFILE –

– PLAN –

ALTERNATE DESIGN AT GRAND CIRCUS FOR TERMINAL SUBWAY



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE AND LOOP

REDUCTION

RATIO

16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A5

A4

A3

1.0

1.1

1.25

1.4

1.6

2.8

3.2

3.6

4.0

2.5

2.2

2.0

1.8

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

EXPLANATION

PLAN

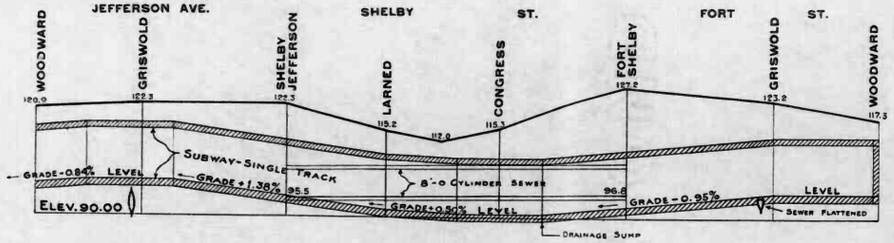
- Outside lines of subway.
- Subway stations.
- New sewer construction.
- Old sewers unchanged.
- Manholes.
- N. C. New Sewer Connections.

PROFILE

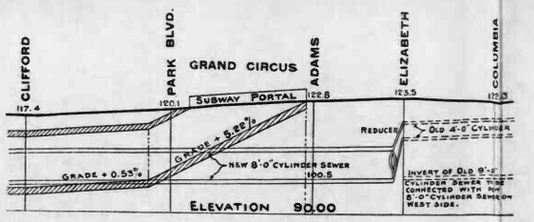
- Subway.
- New Sewer.

Profile shows east side sewers only.

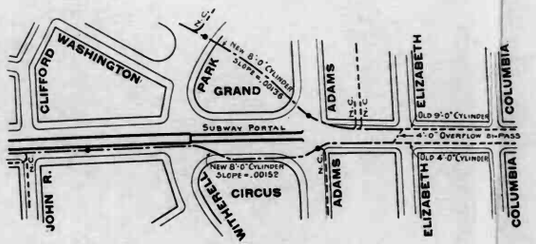
Note:—Station locations shown are fixed by traffic conditions; additional stations above Grand Circus to be located as determined by conditions obtaining at the time the subway is constructed.



PROFILE OF LOOP

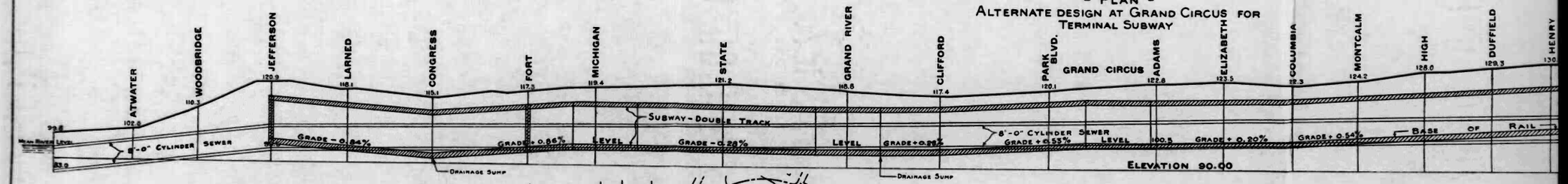


– PROFILE –

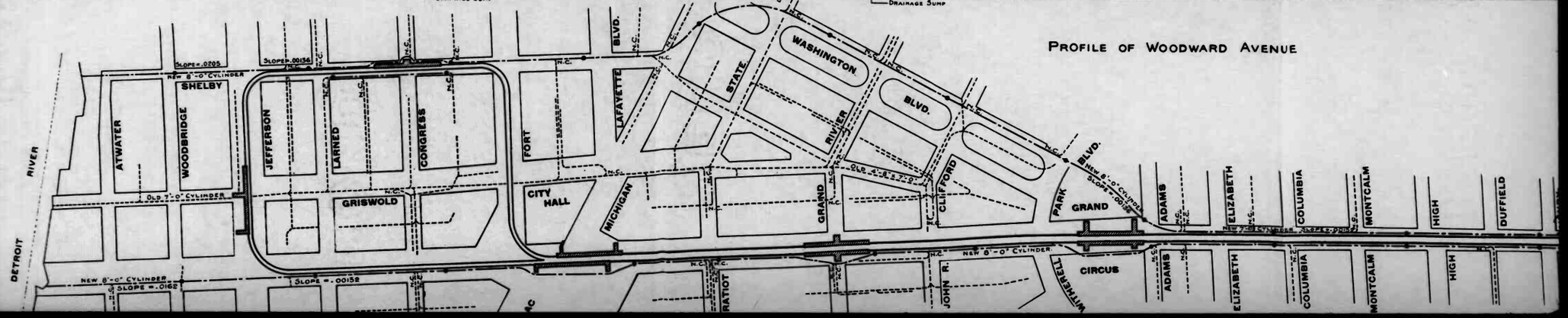


– PLAN –

ALTERNATE DESIGN AT GRAND CIRCUS FOR TERMINAL SUBWAY



PROFILE OF WOODWARD AVENUE



NATION

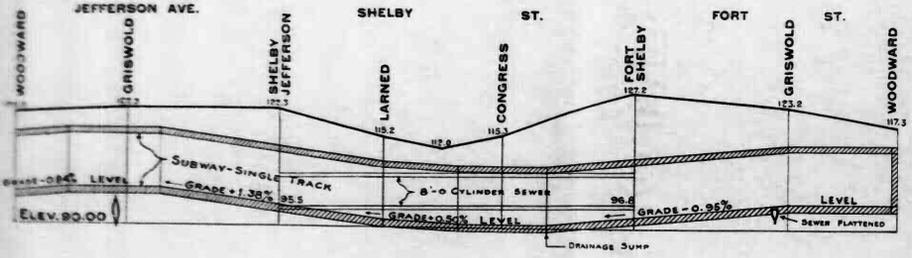
PROFILE

Subway.

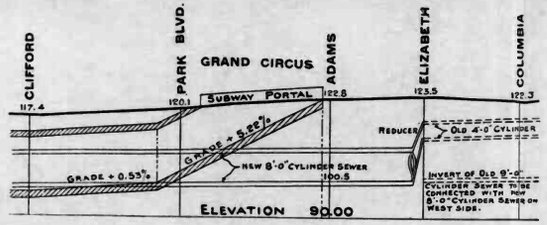
New Sewer.

Profile shows east side sewers only.

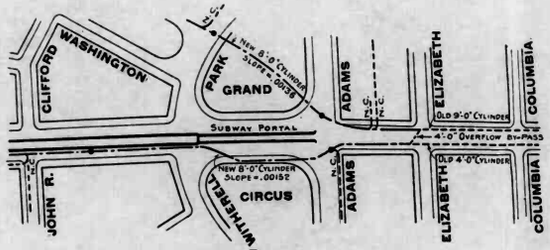
traffic conditions; additional stations above
ined by conditions obtaining at the time the



PROFILE OF LOOP

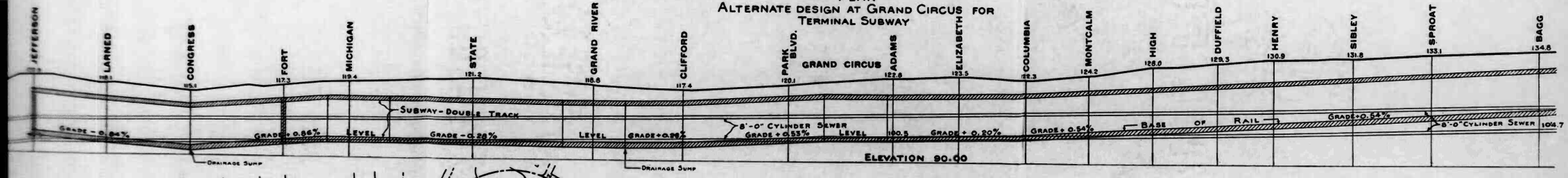


- PROFILE -

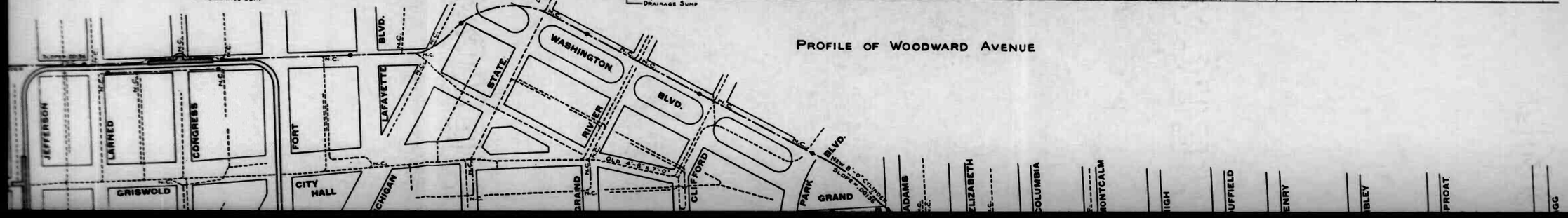


- PLAN -

ALTERNATE DESIGN AT GRAND CIRCUS FOR TERMINAL SUBWAY



PROFILE OF WOODWARD AVENUE



PLAN 12

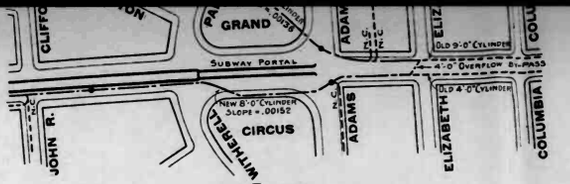
WOODWARD AVENUE SUBWAY SOUTHERN TERMINAL LOOP AND MAIN LINE TO BAGG STREET INCLUDING NEW SEWERS

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

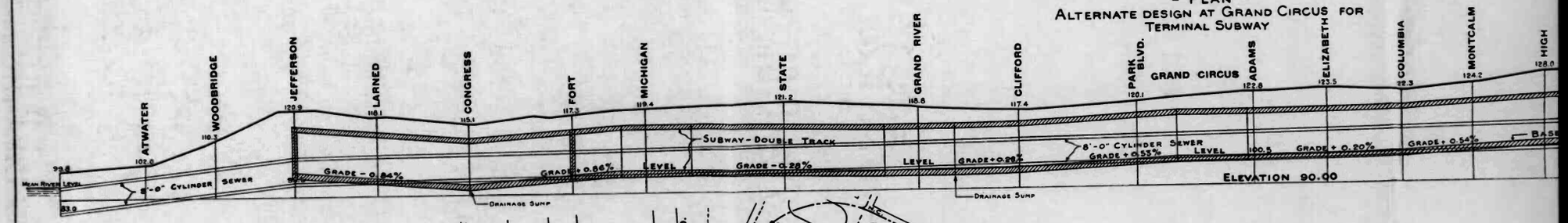
VERTICAL SCALE 5 10 20 30 40 50 60 Feet

HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet

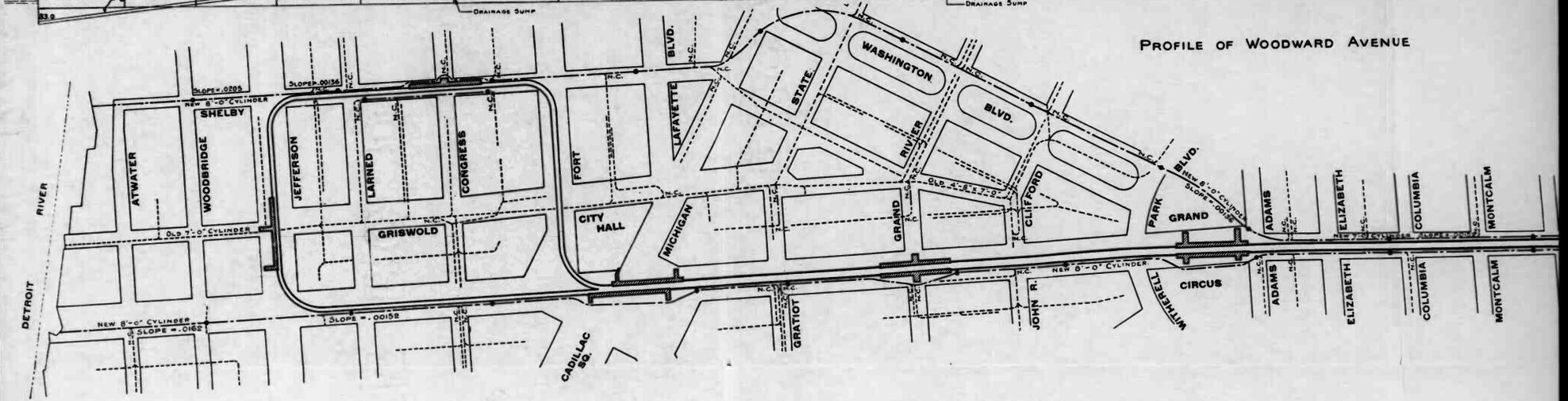
PROFILE OF LOOP



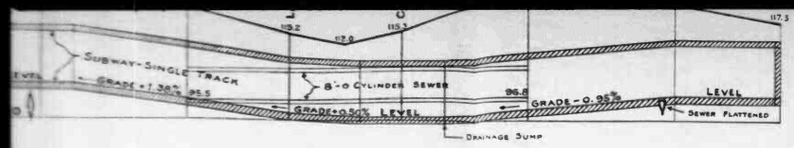
- PLAN -
ALTERNATE DESIGN AT GRAND CIRCUS FOR TERMINAL SUBWAY



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE AND LOOP



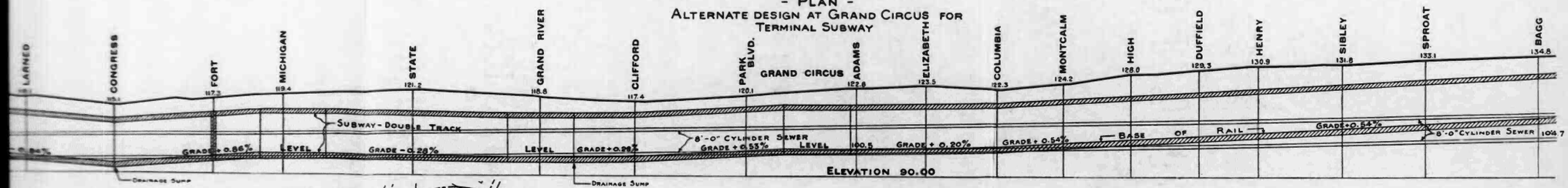
PROFILE OF LOOP

- PLAN -

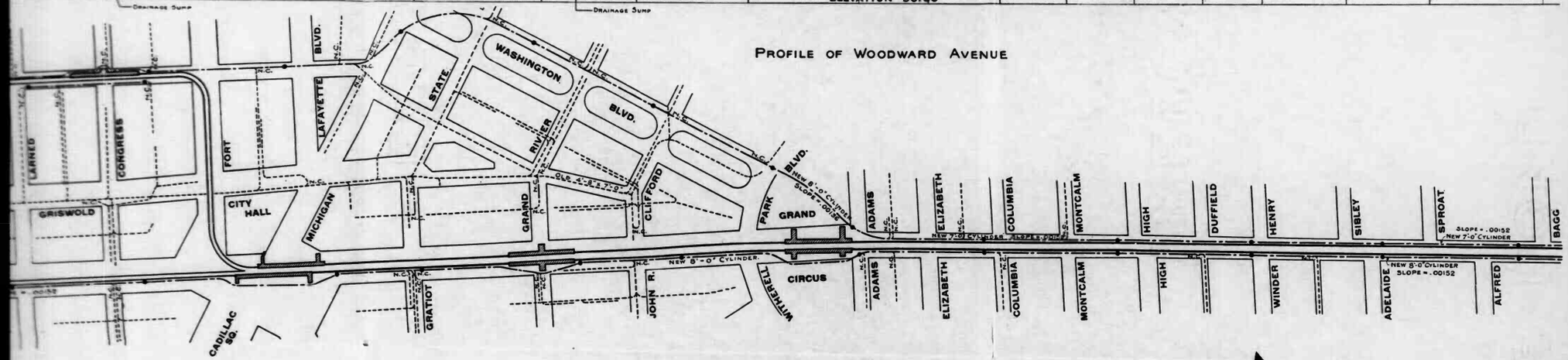
ALTERNATE DESIGN AT GRAND CIRCUS FOR TERMINAL SUBWAY

VERTICAL SCALE 5 10 20 30 40 50 60 Feet

HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE AND LOOP

REDUCTION RATIO 17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A5

A4

A3

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PLAN 13

WOODWARD AVENUE SUBWAY FROM BAGG ST. TO VIRGINIA PARK

INCLUDING NEW SEWERS

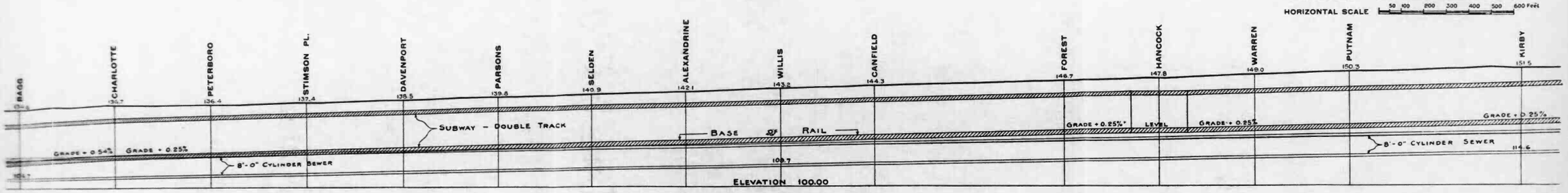
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY 1915

VERTICAL SCALE — 5 10 20 30 40 50 60 Feet
HORIZONTAL SCALE — 50 100 200 300 400 500 600 Feet

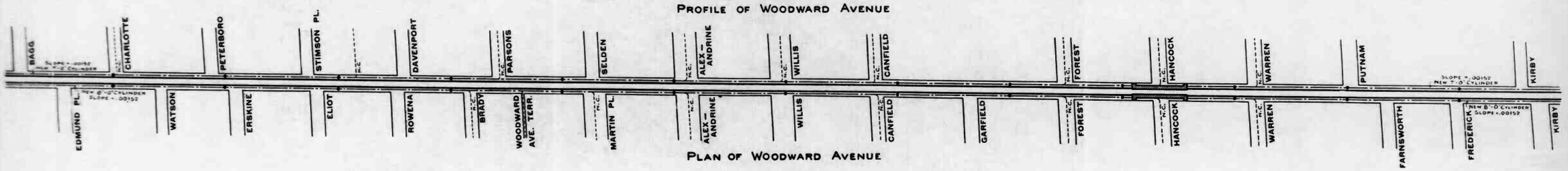
EXPLANATION

PLAN	PROFILE
Outside lines of subway.	Subway.
Subway stations.	New Sewer.
New sewer construction.	Profile shows east side sewers only.
Old sewers unchanged.	
Manholes.	
N. C. New Sewer Connections.	

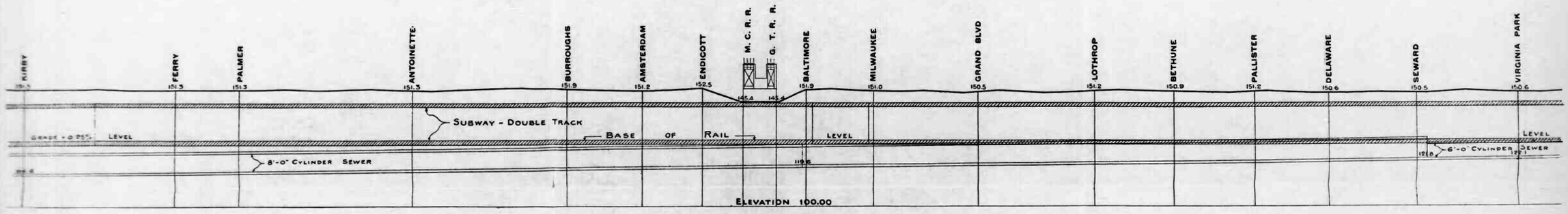
Note — Station locations shown are fixed by traffic conditions; additional stations above Grand Circus to be located as determined by conditions obtaining at the time the subway is constructed.



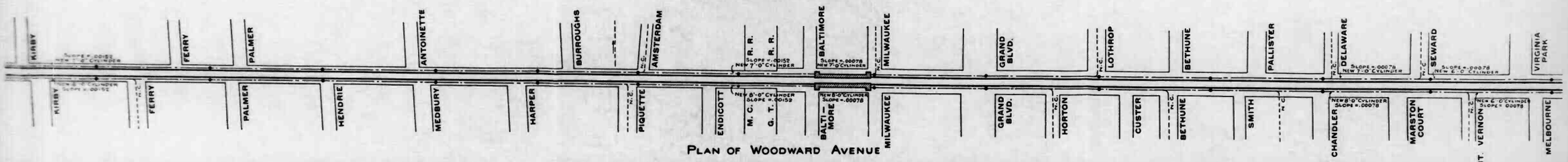
PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE



PROFILE OF WOODWARD AVENUE

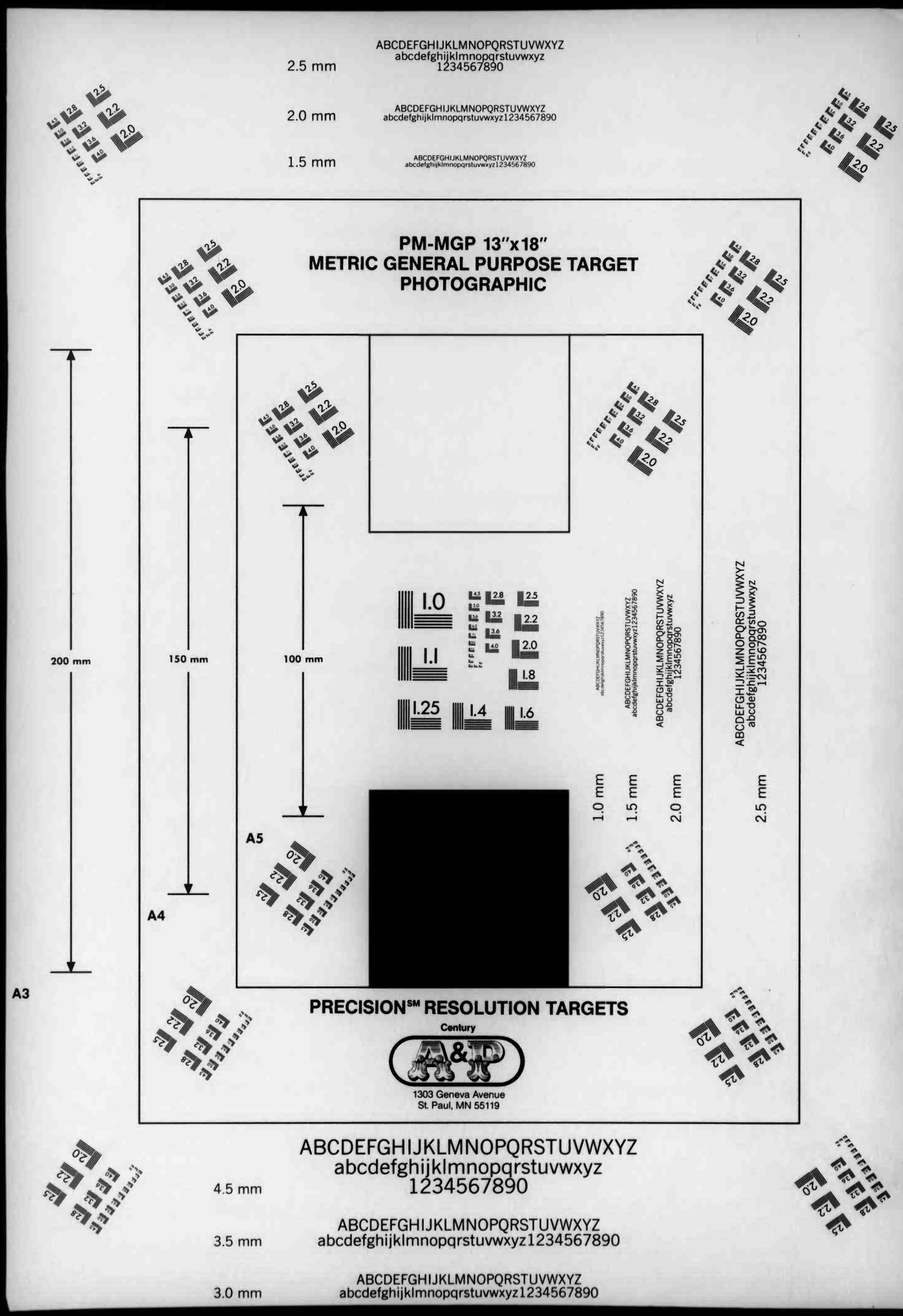


PLAN OF WOODWARD AVENUE

REDUCTION

RATIO

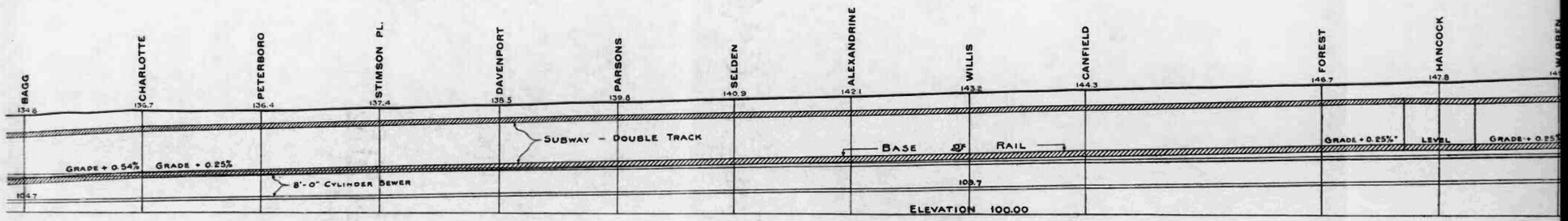
16:1


2.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
2.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
1.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC
200 mm
150 mm
100 mm
A3
A4
A5
1.0
1.1
1.25
1.4
1.6
1.8
2.5
2.2
2.0
1.0 mm
1.5 mm
2.0 mm
2.5 mm
PRECISION℠ RESOLUTION TARGETS
Century
A&P
1303 Geneva Avenue
St. Paul, MN 55119
4.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
3.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
3.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

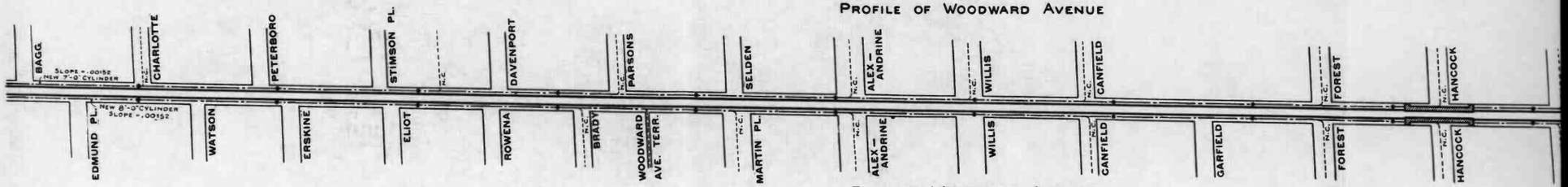
EXPLANATION

PLAN		PROFILE	
═══	Outside lines of subway.	▨	Subway.
▨	Subway stations.	═══	New Sewer.
———	New sewer construction.	Profile shows east side sewers only.	
----------	Old sewers unchanged.		
•	Manholes.		
N. C.	New Sewer Connections.		

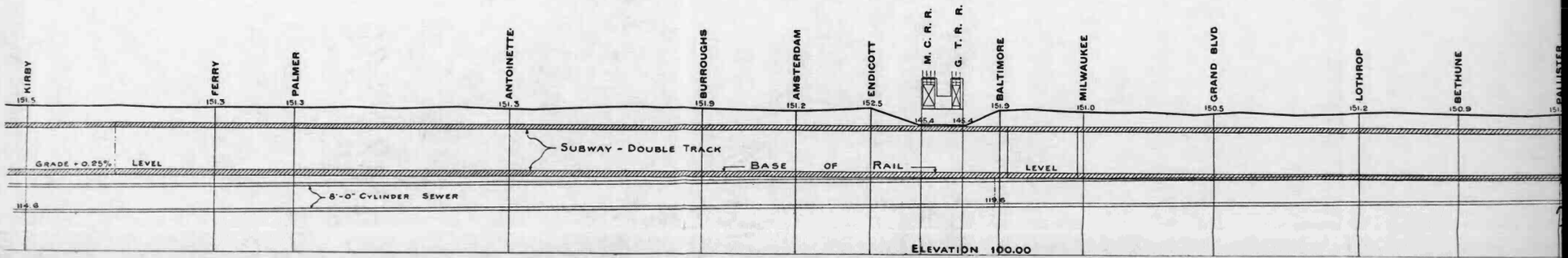
Note:—Station locations shown are fixed by traffic conditions; additional stations above Grand Circus to be located as determined by conditions obtaining at the time the subway is constructed.



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE



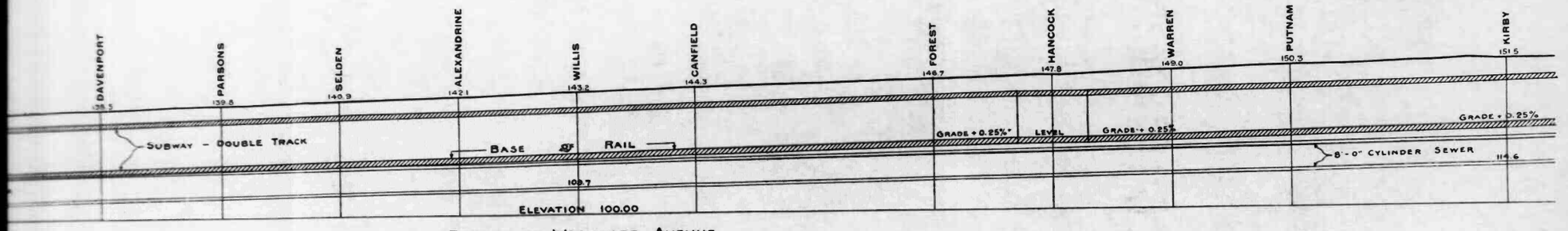
PROFILE OF WOODWARD AVENUE

PLAN 13

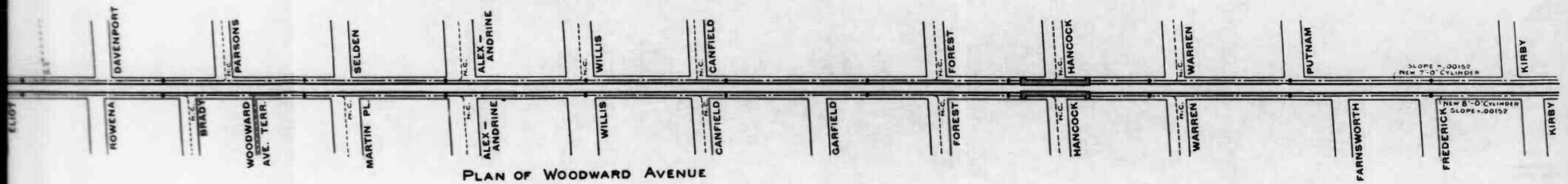
WOODWARD AVENUE SUBWAY
FROM BAGG ST. TO VIRGINIA PARK
INCLUDING NEW SEWERS

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY 1915

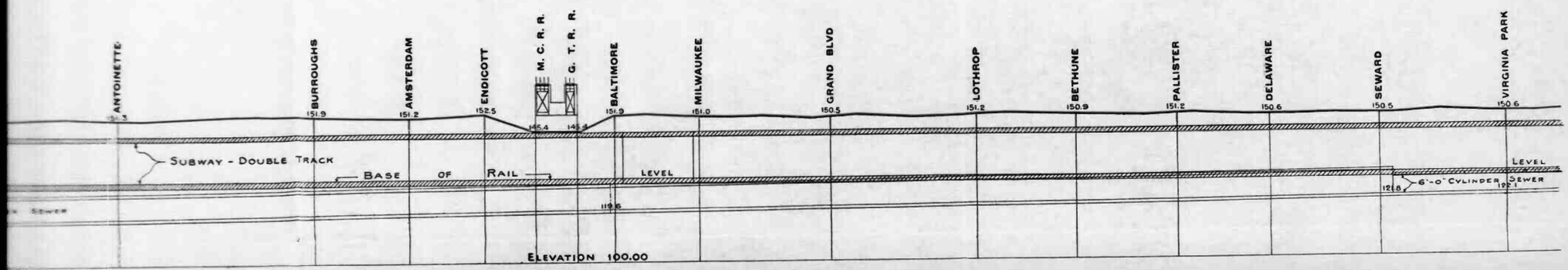
VERTICAL SCALE — 5 10 20 30 40 50 60 Feet
HORIZONTAL SCALE — 50 100 200 300 400 500 600 Feet



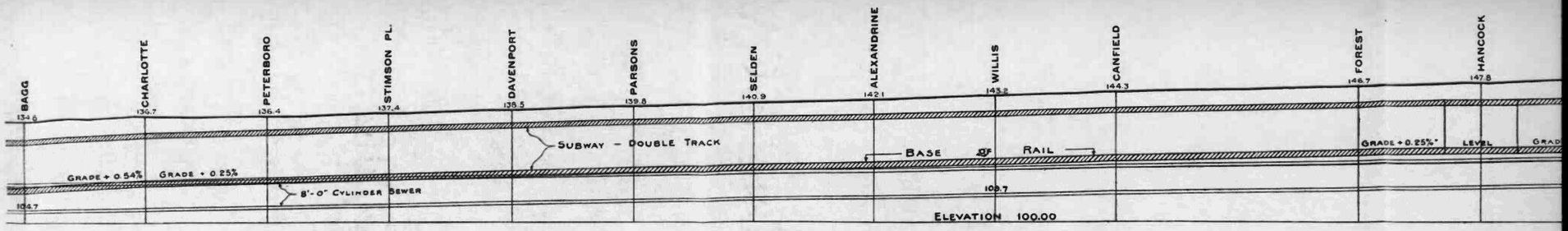
PROFILE OF WOODWARD AVENUE



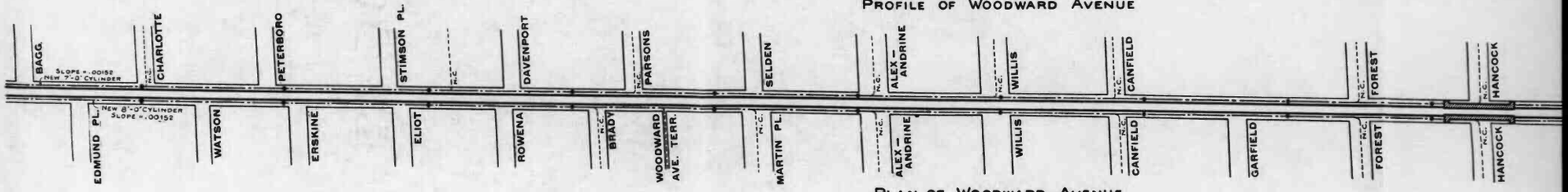
PLAN OF WOODWARD AVENUE



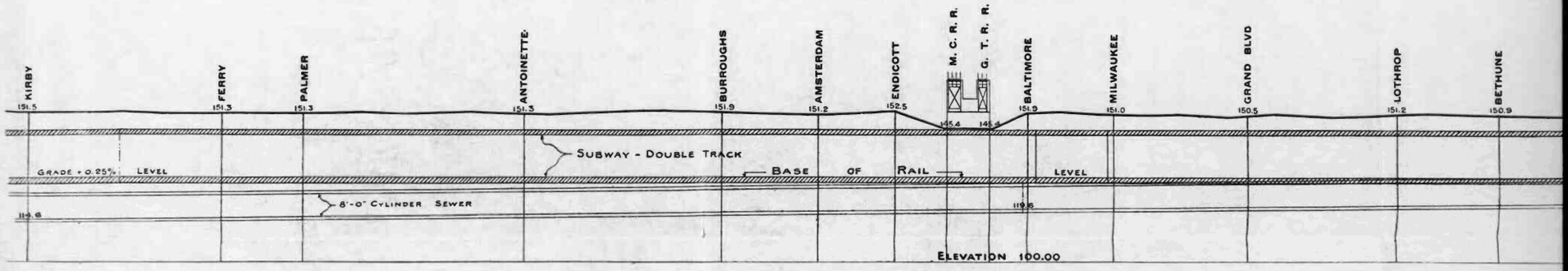
PROFILE OF WOODWARD AVENUE



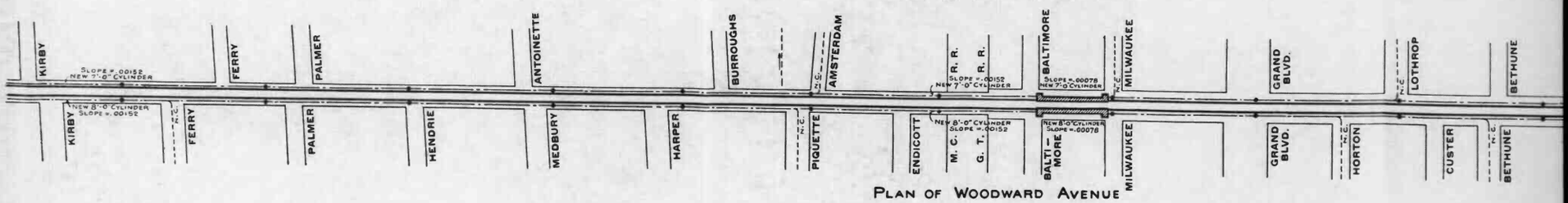
PROFILE OF WOODWARD AVENUE



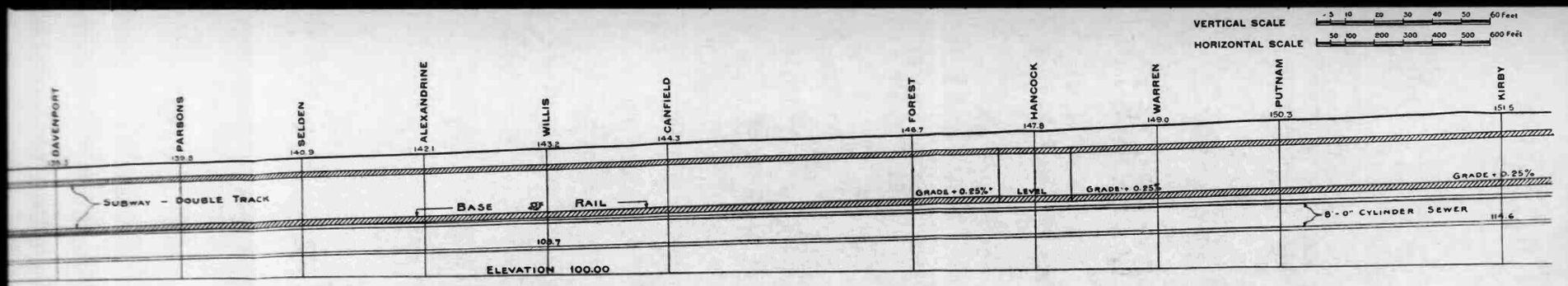
PLAN OF WOODWARD AVENUE



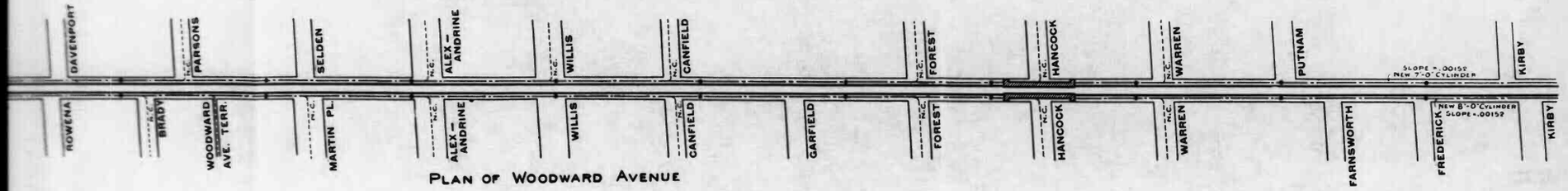
PROFILE OF WOODWARD AVENUE



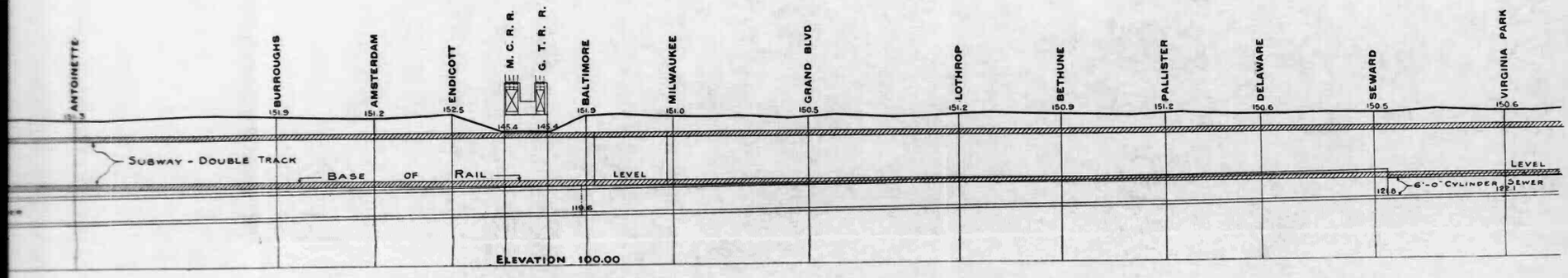
PLAN OF WOODWARD AVENUE



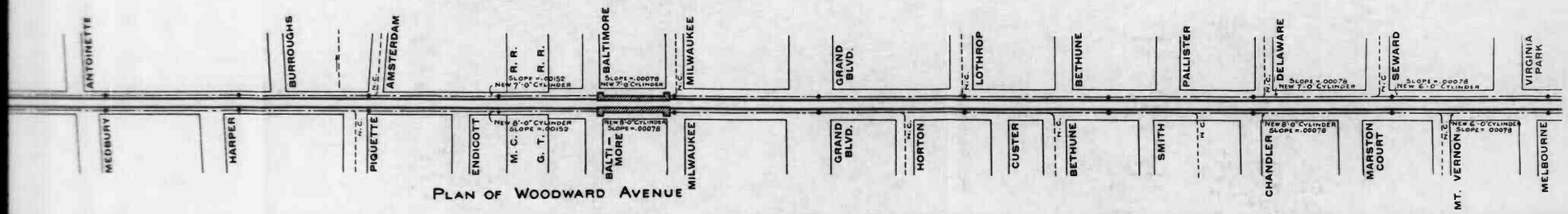
PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE

REDUCTION

RATIO

17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

1.8

2.0

2.2

2.5

2.8

3.2

3.6

4.0

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PLAN 14

WOODWARD AVENUE SUBWAY
FROM VIRGINIA PARK TO MANCHESTER AVE.

INCLUDING NEW SEWERS

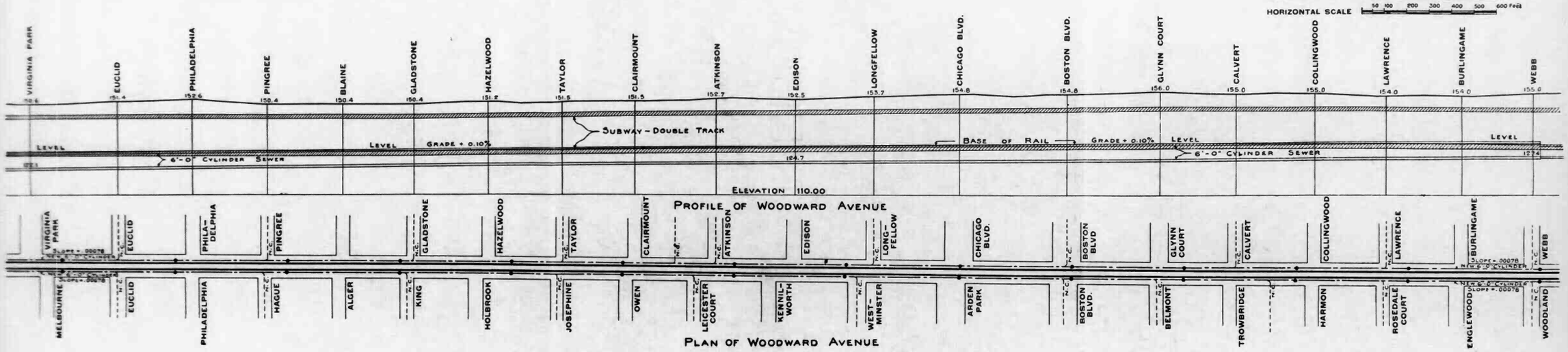
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

VERTICAL SCALE 5 10 20 30 40 50 60 Feet
HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet

EXPLANATION

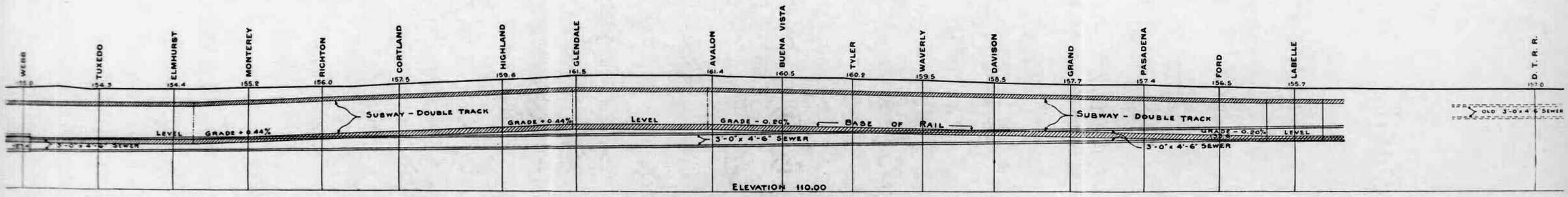
PLAN	PROFILE
Outside lines of subway.	Subway.
Subway stations.	New Sewer.
New sewer construction.	Profile shows east side sewers only.
Old sewers unchanged.	
Manholes.	
N. C. New Sewer Connections.	

Note — Station locations shown are fixed by traffic conditions; additional stations above Grand Circus to be located as determined by conditions obtaining at the time the subway is constructed.

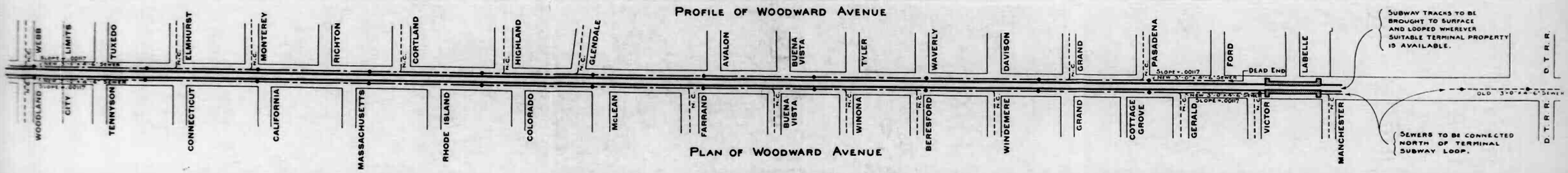


PROFILE OF WOODWARD AVENUE

PLAN OF WOODWARD AVENUE



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE

REDUCTION

RATIO

16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

EXPLANATION

PLAN

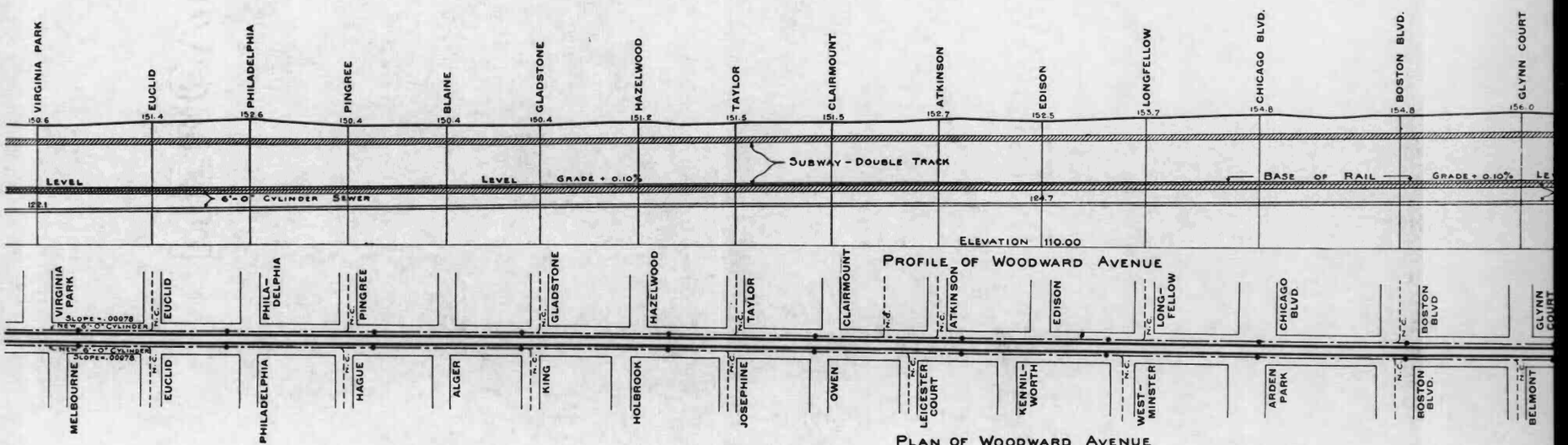
- Outside lines of subway.
- Subway stations.
- New sewer construction.
- Old sewers unchanged.
- Manholes.
- N. C. New Sewer Connections.

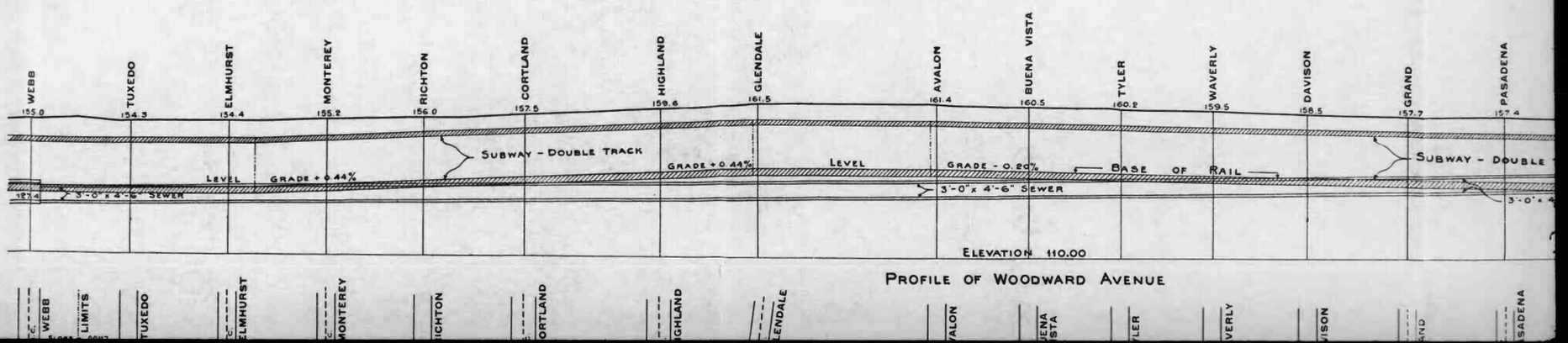
PROFILE

- Subway.
- New Sewer.

Profile shows east side sewers only.

Note:—Station locations shown are fixed by traffic conditions; additional stations above Grand Circue to be located as determined by conditions obtaining at the time the subway is constructed.





PLAN 14

WOODWARD AVENUE SUBWAY
FROM VIRGINIA PARK TO MANCHESTER AVE.

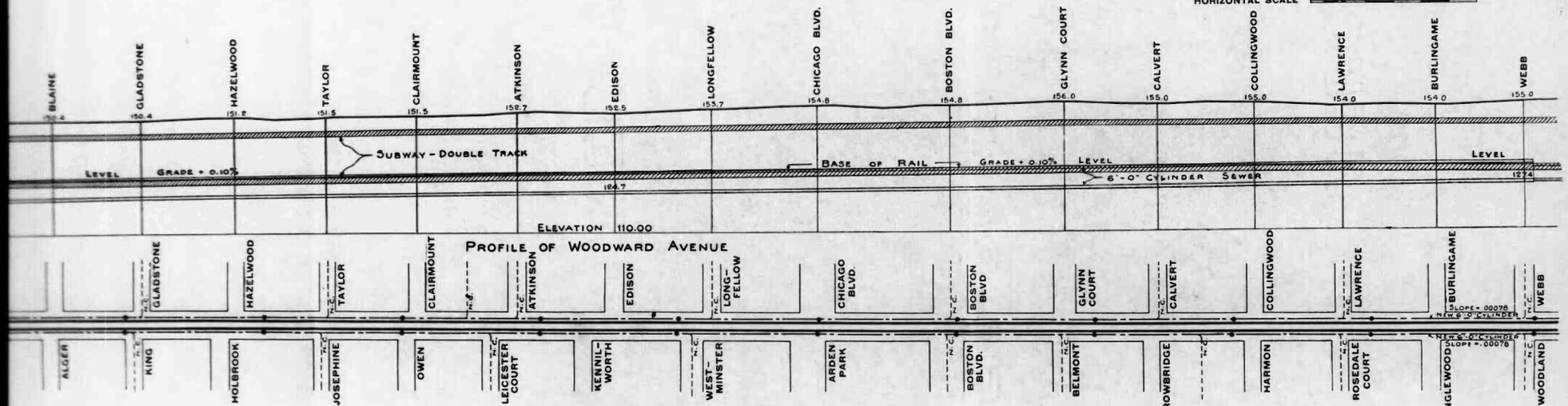
INCLUDING NEW SEWERS

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

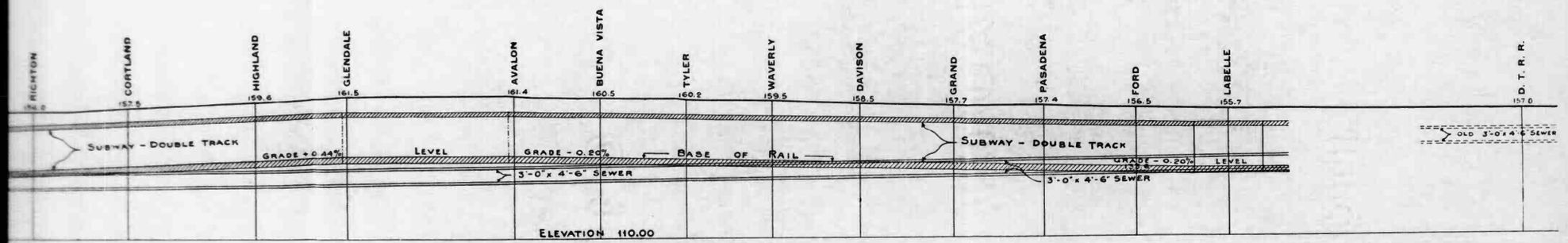
VERTICAL SCALE 5 10 20 30 40 50 60 Feet

HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet



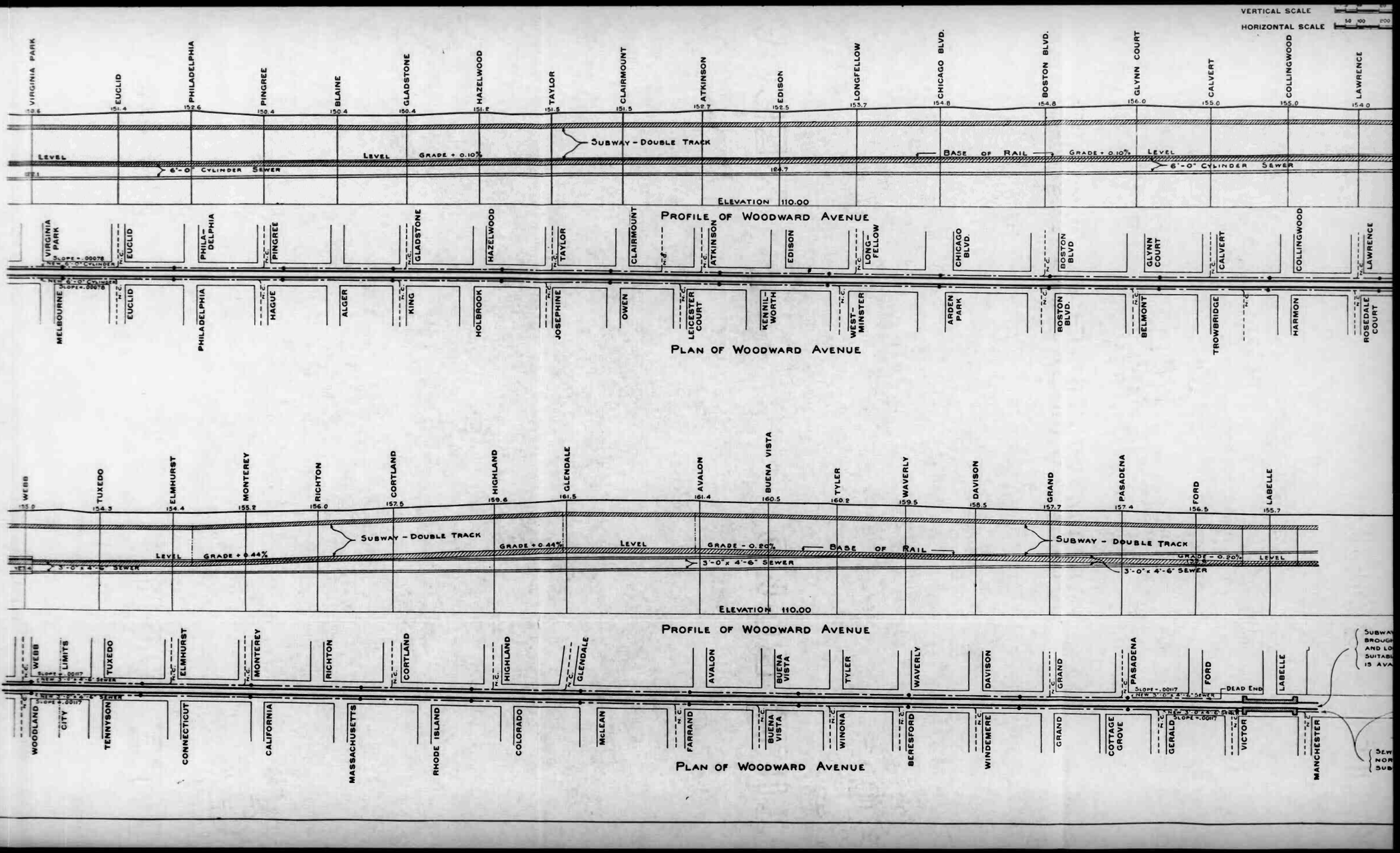
PROFILE OF WOODWARD AVENUE

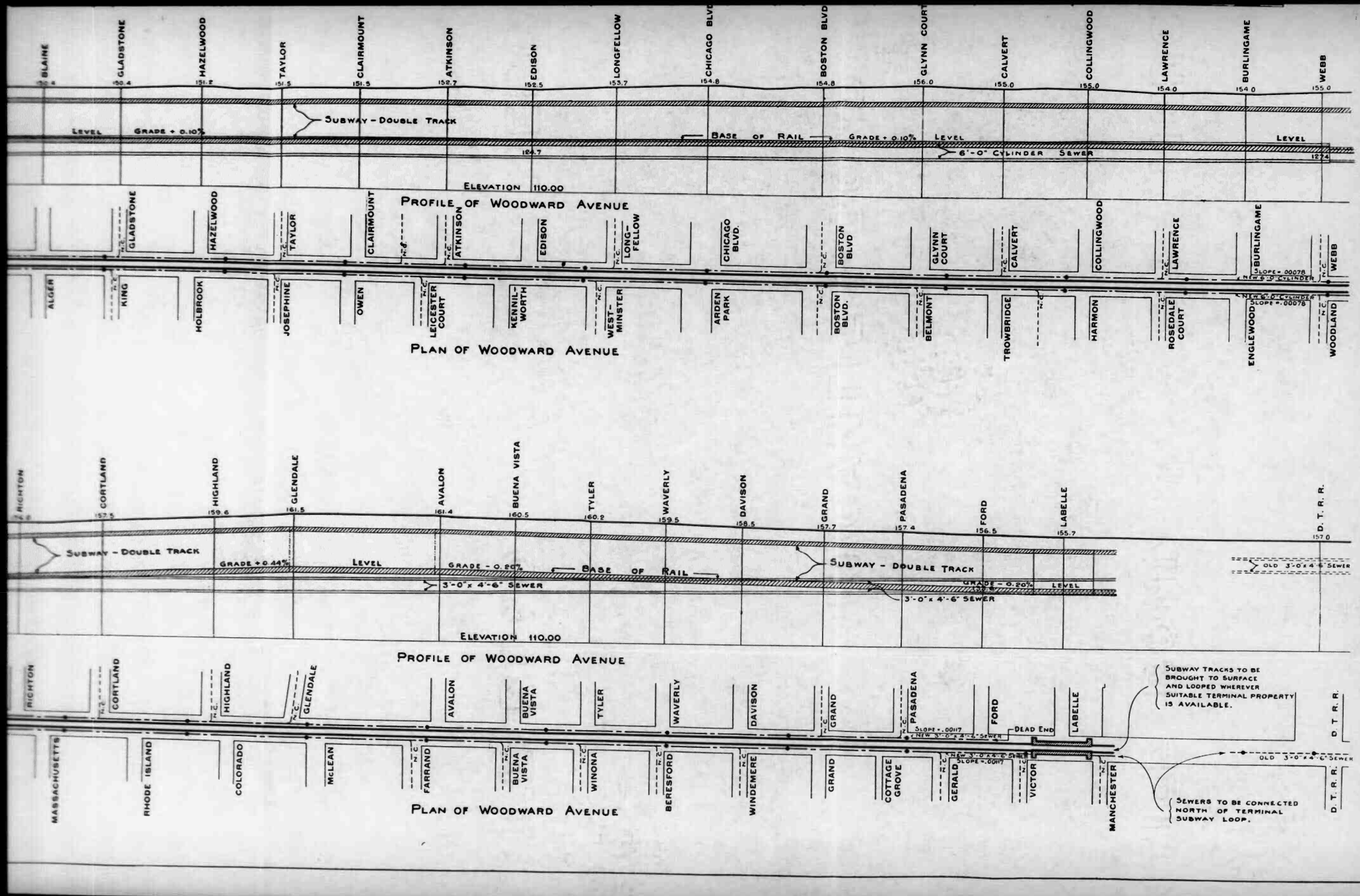
PLAN OF WOODWARD AVENUE



PROFILE OF WOODWARD AVENUE

SUBWAY TRACKS TO BE BROUGHT TO SURFACE AND LOOPED WHEREVER SUITABLE TERMINAL PROPERTY IS AVAILABLE.


VERTICAL SCALE
HORIZONTAL SCALE
VIRGINIA PARK
EUCLID
PHILADELPHIA
PINGREE
BLAINE
GLADSTONE
HAZELWOOD
TAYLOR
CLAIRMOUNT
ATKINSON
EDISON
LONGFELLOW
CHICAGO BLVD.
BOSTON BLVD.
GLYNN COURT
CALVERT
COLLINGWOOD
LAWRENCE
LEVEL
GRADE + 0.10%
SUBWAY - DOUBLE TRACK
BASE OF RAIL
6'-0" CYLINDER SEWER
ELEVATION 110.00
PROFILE OF WOODWARD AVENUE
MELBOURNE
HAGUE
ALGER
KING
HOLBROOK
JOSEPHINE
OWEN
LEICESTER COURT
KENNILWORTH
WESTMINSTER
ARDEN PARK
BELMONT
TROWBRIDGE
HARMON
ROSEDALE COURT
PLAN OF WOODWARD AVENUE
WEBB
TUXEDO
ELMHURST
MONTEREY
RICHTON
CORTLAND
HIGHLAND
GLENDALE
AVALON
BUENA VISTA
TYLER
WAVERLY
DAVISON
GRAND
PASADENA
FORD
LABELLE
GRADE + 0.44%
GRADE - 0.20%
3'-0" x 4'-6" SEWER
PROFILE OF WOODWARD AVENUE
WOODLAND
CITY LIMITS
TENNYSON
CONNECTICUT
CALIFORNIA
MASSACHUSETTS
RHODE ISLAND
COLORADO
McLEAN
FARRAND
WINONA
BERESFORD
WINDEMERE
COTTAGE GROVE
GERALD
VICTOR
MANCHESTER
DEAD END
PLAN OF WOODWARD AVENUE


BLAINE
GLADSTONE
HAZELWOOD
TAYLOR
CLAIRMOUNT
ATKINSON
EDISON
LONGFELLOW
CHICAGO BLVD
BOSTON BLVD
GLYNN COURT
CALVERT
COLLINGWOOD
LAWRENCE
BURLINGAME
WEBB
150.4
150.4
151.2
151.5
151.5
152.7
152.5
153.7
154.8
154.8
156.0
155.0
155.0
154.0
154.0
155.0
LEVEL
GRADE + 0.10%
SUBWAY - DOUBLE TRACK
BASE OF RAIL
GRADE + 0.10%
LEVEL
LEVEL
6'-0" CYLINDER SEWER
184.7
127.4
ELEVATION 110.00
PROFILE OF WOODWARD AVENUE
ALGER
KING
HOLBROOK
JOSEPHINE
OWEN
LEICESTER COURT
KENNILWORTH
WESTMINSTER
ARDEN PARK
BOSTON BLVD.
BELMONT
TROWBRIDGE
HARMON
ROSEDALE COURT
ENGLEWOOD
WOODLAND
SLOPE = .00078
NEW 6'-0" CYLINDER
PLAN OF WOODWARD AVENUE
RIGHTON
CORTLAND
HIGHLAND
GLENDALE
AVALON
BUENA VISTA
TYLER
WAVERLY
DAVISON
GRAND
PASADENA
FORD
LABELLE
D.T.R.R.
157.5
159.6
161.5
161.4
160.5
160.2
159.5
158.5
157.7
157.4
156.5
155.7
157.0
SUBWAY - DOUBLE TRACK
GRADE + 0.44%
LEVEL
GRADE - 0.80%
BASE OF RAIL
3'-0" x 4'-6" SEWER
SUBWAY - DOUBLE TRACK
GRADE - 0.80%
LEVEL
3'-0" x 4'-6" SEWER
OLD 3'-0" x 4'-6" SEWER
ELEVATION 110.00
PROFILE OF WOODWARD AVENUE
MASSACHUSETTS
RHODE ISLAND
COLORADO
McLEAN
FARRAND
BUENA VISTA
WINONA
BERESFORD
WINDEMERE
GRAND
COTTAGE GROVE
GERALD
VICTOR
MANCHESTER
SLOPE = .0017
NEW 3'-0" x 4'-6" SEWER
DEAD END
SUBWAY TRACKS TO BE BROUGHT TO SURFACE AND LOOPED WHEREVER SUITABLE TERMINAL PROPERTY IS AVAILABLE.
SEWERS TO BE CONNECTED NORTH OF TERMINAL SUBWAY LOOP.
OLD 3'-0" x 4'-6" SEWER
PLAN OF WOODWARD AVENUE

REDUCTION

RATIO

17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PLAN 15

WOODWARD AVENUE SUBWAY
PRESENT LOCATION OF SEWERS
FROM DETROIT RIVER TO BAGG STREET

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

VERTICAL SCALE — 0 5 10 20 30 40 50 60 Feet
HORIZONTAL SCALE — 0 50 100 200 300 400 500 600 Feet

EXPLANATION

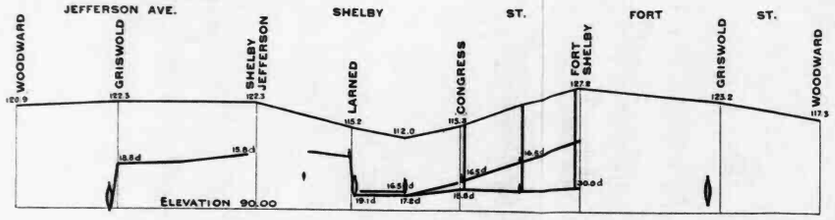
PLAN

- 8-0" and 4-0" Cylinder Woodward Avenue Sewer and Tributaries.
- All other Sewers and Tributaries
- Manholes.

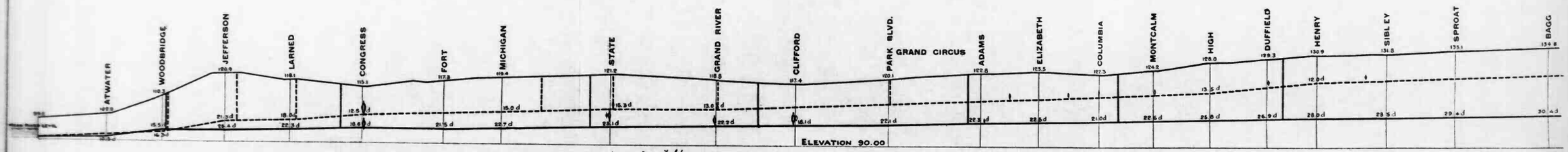
PROFILE

- Invert bottom of 8-0" and 4-0" Cylinder Woodward Ave. Sewer.
- Invert bottom of all other sewers.
- Figures 133.1 indicate curb elevations above city datum.
- Figures 28.5d indicate depths of sewer inverts below surface of pavement.

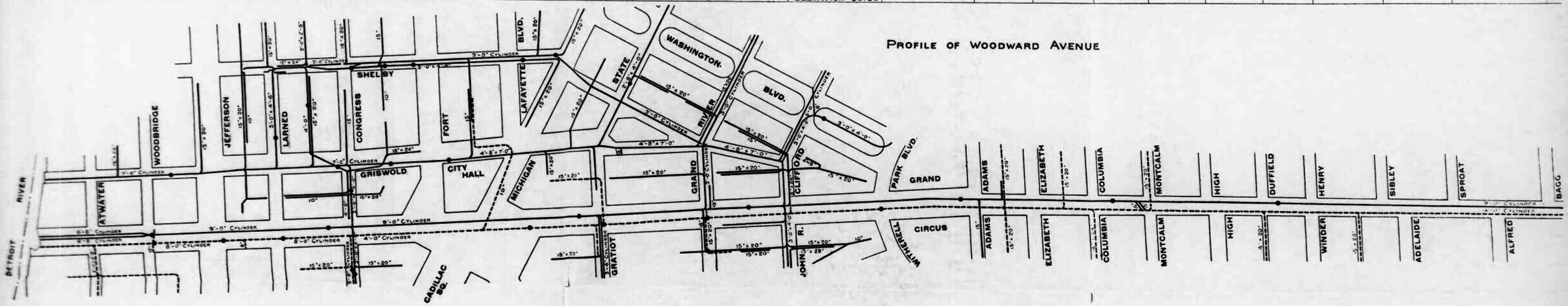
For location of Loop see Plan No. 12



PROFILE OF LOOP



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE AND LOOP

REDUCTION RATIO 16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

EXPLANATION

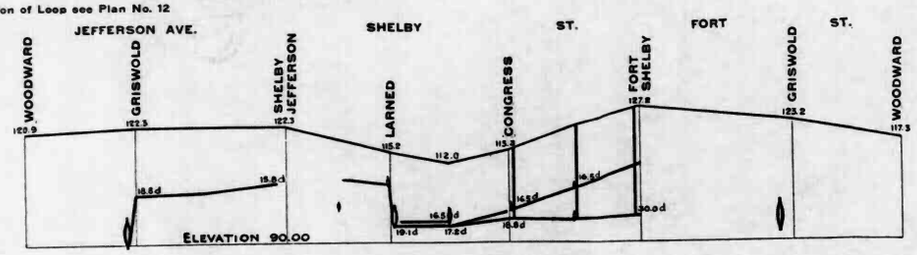
PLAN

- 8'-0" and 4'-0" Cylinder Woodward Avenue Sewer and Tributaries.
- All other Sewers and Tributaries
- Manholes.

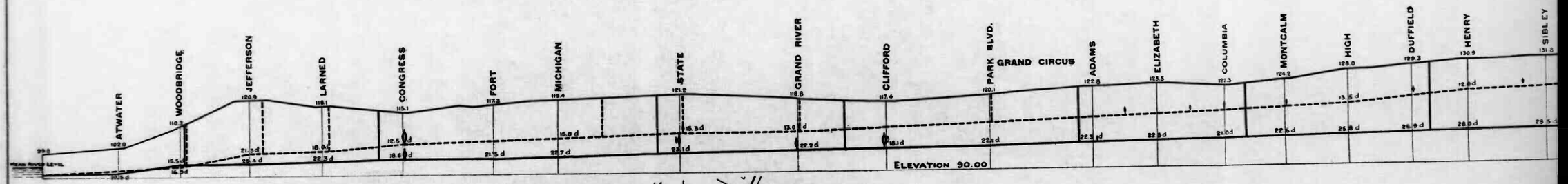
PROFILE

- Invert bottom of 8'-0" and 4'-0" Cylinder Woodward Ave. Sewer.
- Invert bottom of all other sewers.
- Figures 133.1 indicate curb elevations above city datum.
- Figures 28.5d indicate depths of sewer inverts below surface of pavement.

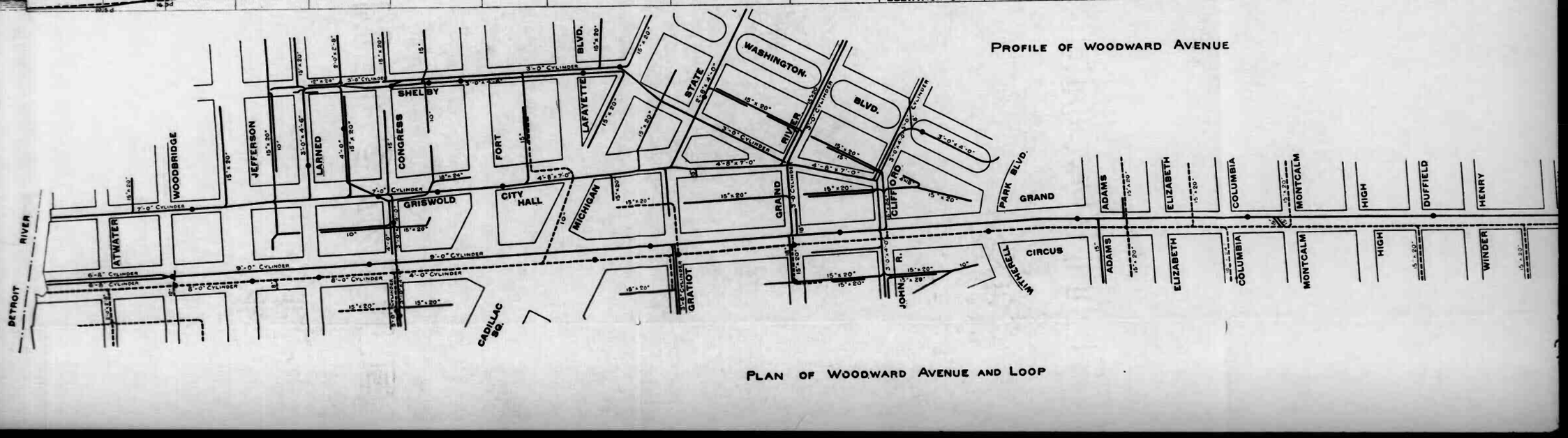
For location of Loop see Plan No. 12



PROFILE OF LOOP



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE AND LOOP

WOODWARD AV
PRESENT LOCAT
FROM DETROIT RIVE

ACCOMPANYIN
BOARD OF STREET RAI
CITY OF

BARCLAY PARSONS & KLAP
JANUAR

VERTICAL SCALE
HORIZONTAL SCALE

PLAN 15

WOODWARD AVENUE SUBWAY
PRESENT LOCATION OF SEWERS
FROM DETROIT RIVER TO BAGG STREET

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

VERTICAL SCALE 0 5 10 20 30 40 50 60 Feet
HORIZONTAL SCALE 0 50 100 200 300 400 500 600 Feet

EXPLANATION

PROFILE

- Woodward and Tributaries.
- Tributaries

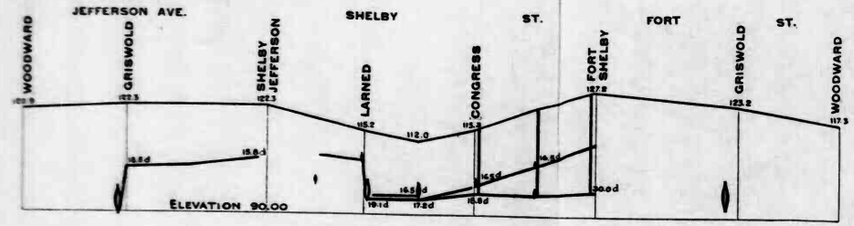
Invert bottom of 8-0" and 4-0" Cylinder Woodward Ave. Sewer.

Invert bottom of all other sewers.

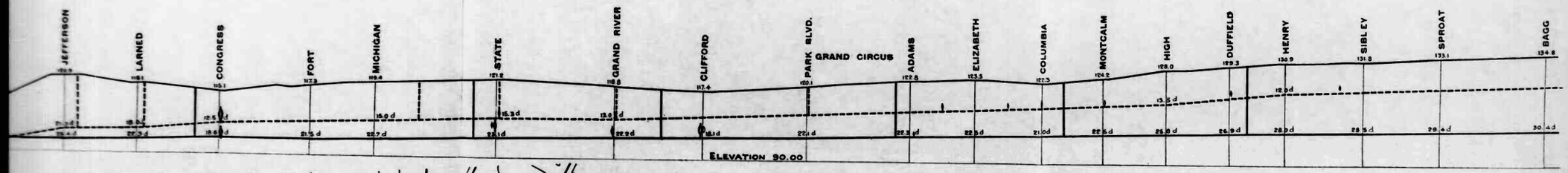
Figures 133.1 indicate curb elevations above city datum.

Figures 28.5d indicate depths of sewer inverts below surface of pavement.

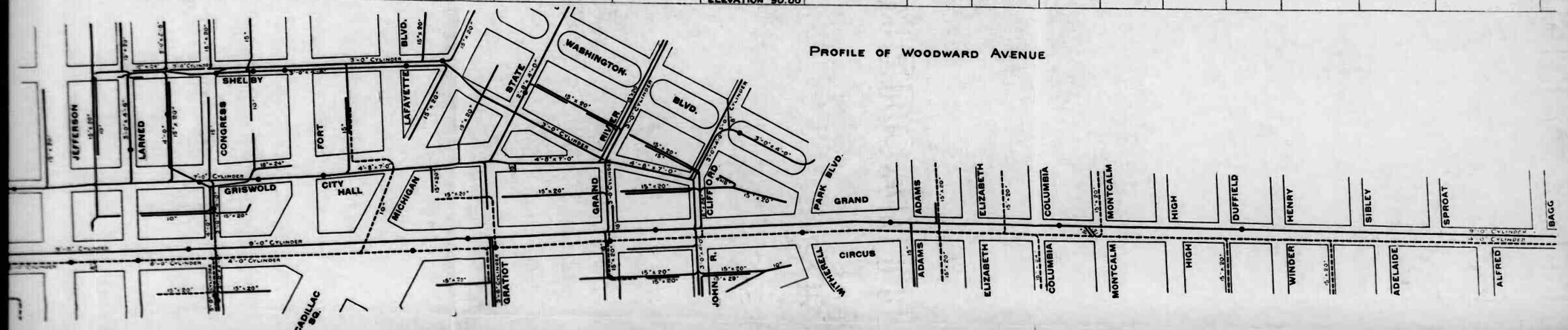
For location of Loop see Plan No. 12

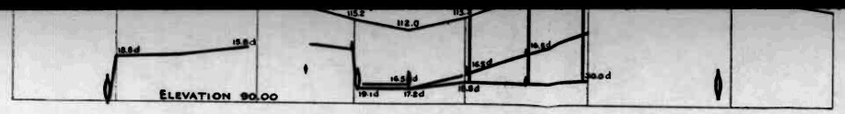


PROFILE OF LOOP

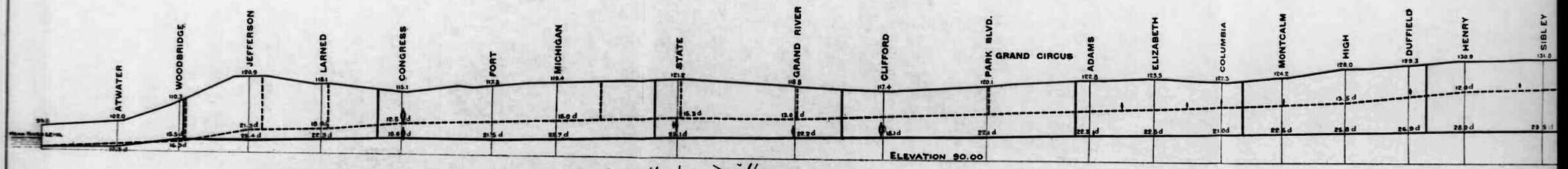


PROFILE OF WOODWARD AVENUE

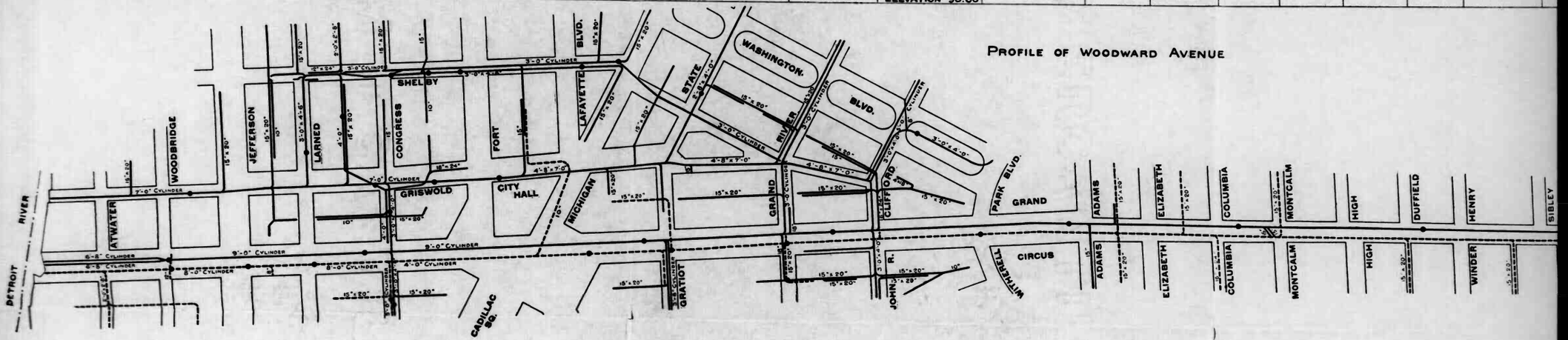




PROFILE OF LOOP



PROFILE OF WOODWARD AVENUE



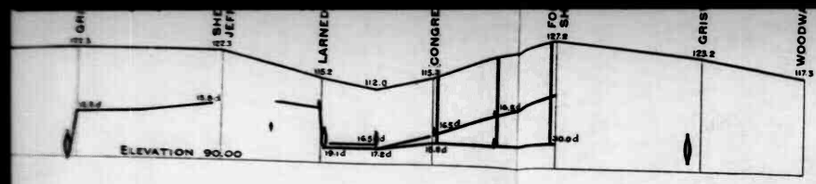
PLAN OF WOODWARD AVENUE AND LOOP

BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS

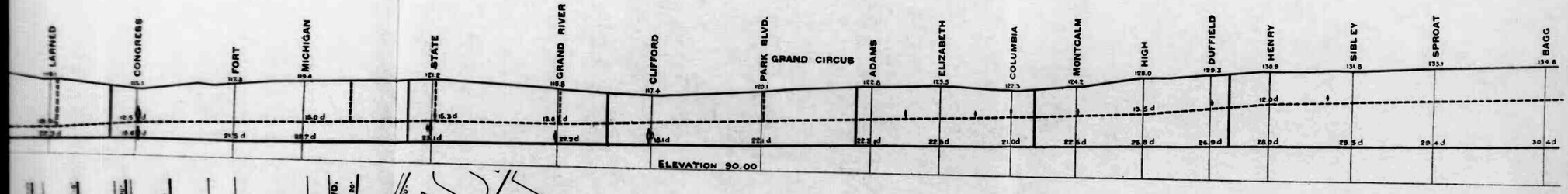
JANUARY, 1915

VERTICAL SCALE - 5 10 20 30 40 50 60 Feet

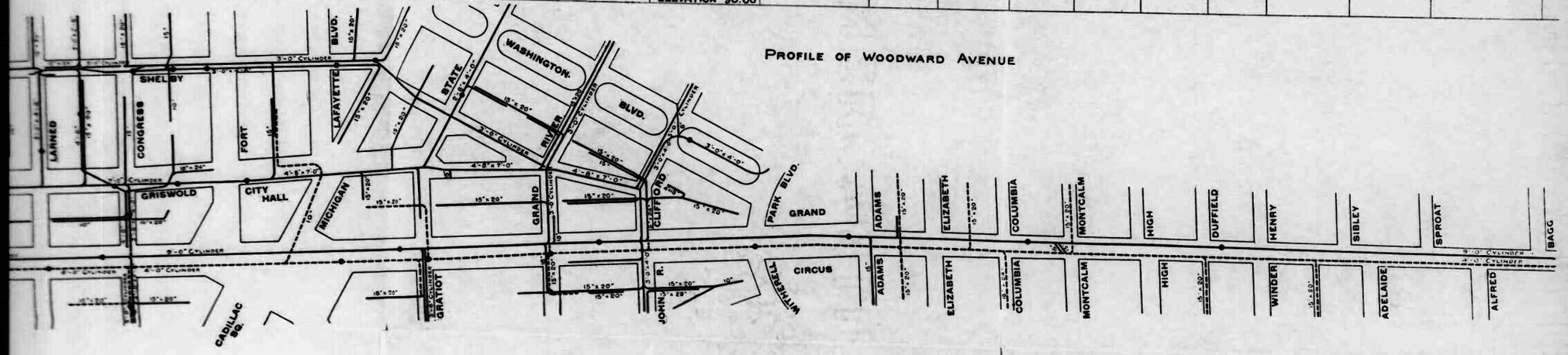
HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet



PROFILE OF LOOP



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE AND LOOP

REDUCTION RATIO 17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A5

A4

A3

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PLAN 16

WOODWARD AVENUE SUBWAY
PRESENT LOCATION OF SEWERS
FROM BAGG ST. TO VIRGINIA PARK

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

VERTICAL SCALE 5 10 20 30 40 50 60 Feet
HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet

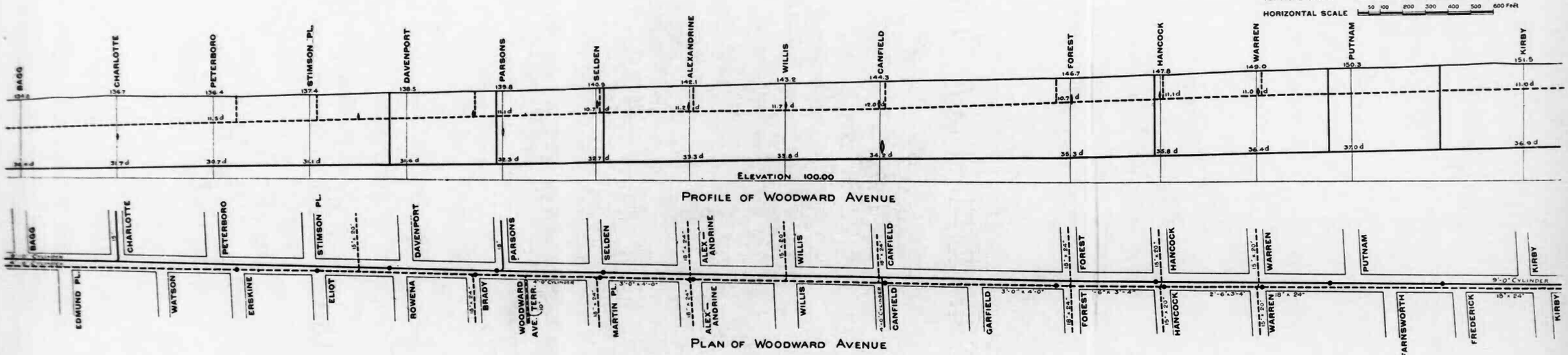
EXPLANATION

PLAN

- 4'-0" Cylinder Woodward Avenue Sewer and Tributaries.
- 9'-0" Cylinder Woodward Avenue Sewer and Tributaries.
- Manholes.

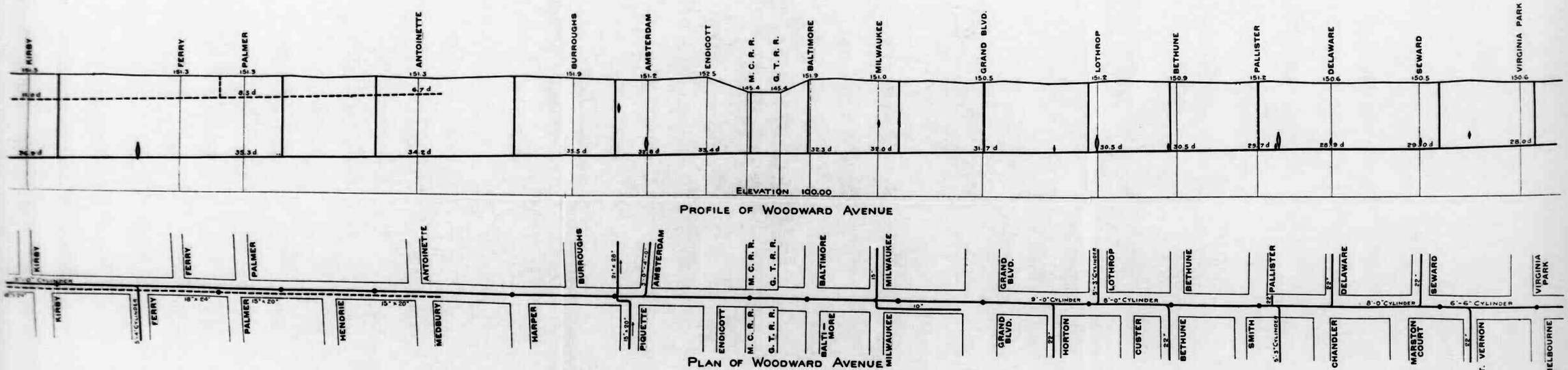
PROFILE

- Invert bottom of 4'-0" Cylinder Woodward Avenue Sewer and Tributaries.
- Invert bottom of 9'-0" Cylinder Woodward Avenue Sewer and Tributaries.
- Figures 150.5 indicate curb elevations above city datum.
- Figures 28.9d indicate depths of sewer inverts below surface of pavement.



PROFILE OF WOODWARD AVENUE

PLAN OF WOODWARD AVENUE



PROFILE OF WOODWARD AVENUE

PLAN OF WOODWARD AVENUE

REDUCTION

RATIO

16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13″x18″
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A5

A4

A3

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

A&P

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

EXPLANATION

PLAN

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- 9'-0" Cylinder Woodward Avenue Sewer and Tributaries.
- Manholes.

PROFILE

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- Invert bottom of 9'-0" Cylinder Woodward Avenue Sewer and Tributaries.

Figures 150.5 indicate curb elevations above city datum.

Figures 28.9d indicate depths of sewer inverts below surface of pavement.

WOODWARD A
PRESENT LOCA
FROM BAGG ST.

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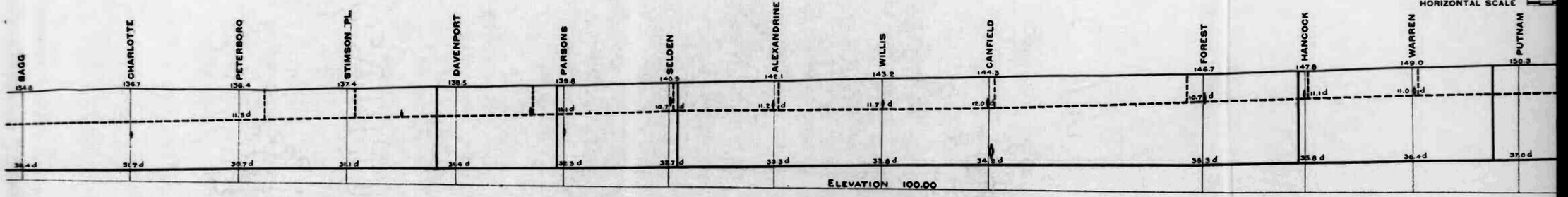
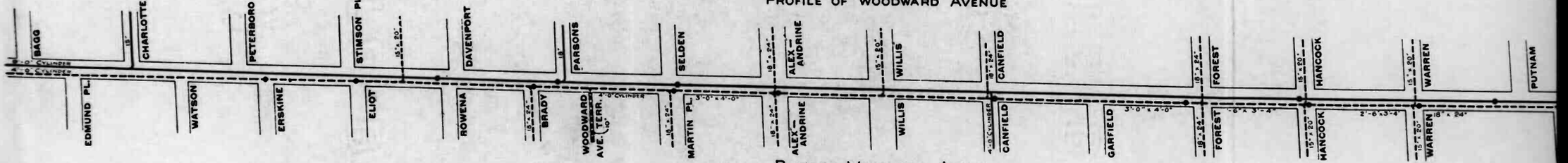
BOARD OF STREET R
CITY O

BARCLAY PARSONS & KL
JANU

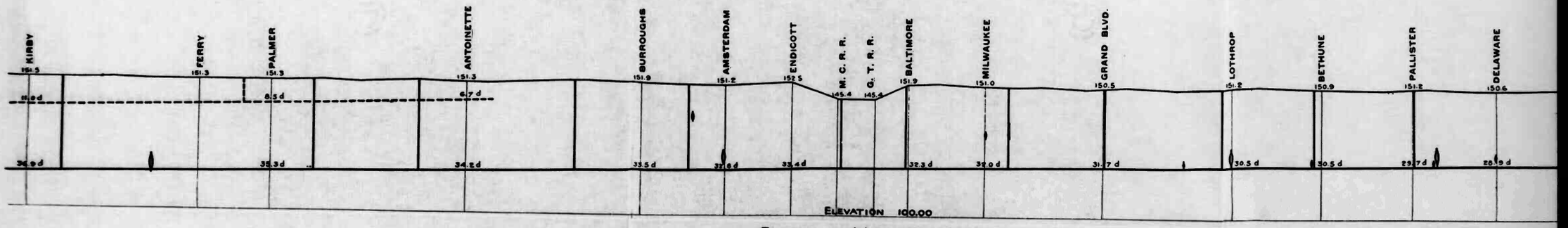
VERTICAL SCALE 5
HORIZONTAL SCALE 50



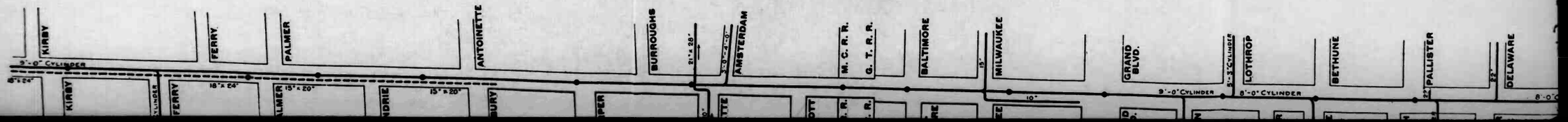
PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE



PROFILE OF WOODWARD AVENUE



PLAN 16

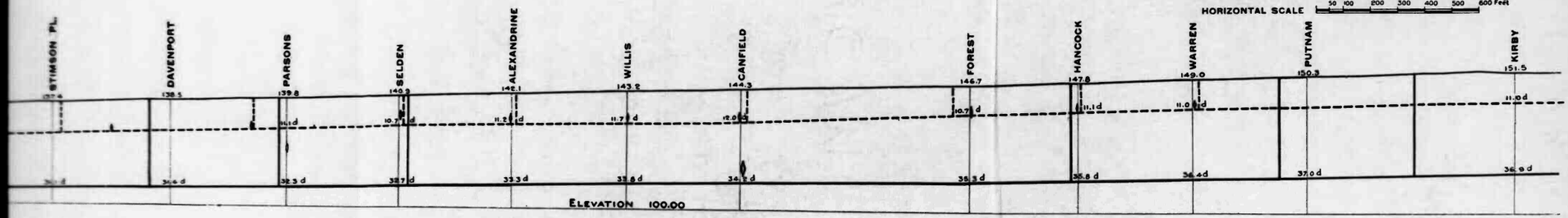
WOODWARD AVENUE SUBWAY
PRESENT LOCATION OF SEWERS
FROM BAGG ST. TO VIRGINIA PARK

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1916

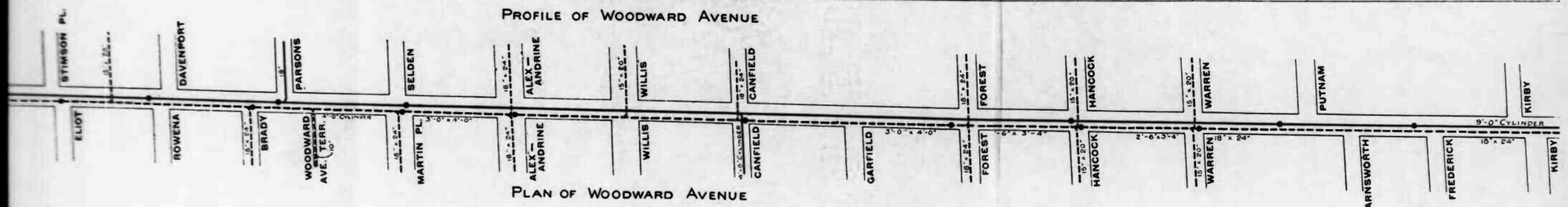
VERTICAL SCALE 5 10 20 30 40 50 60 Feet
HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet

PROFILE

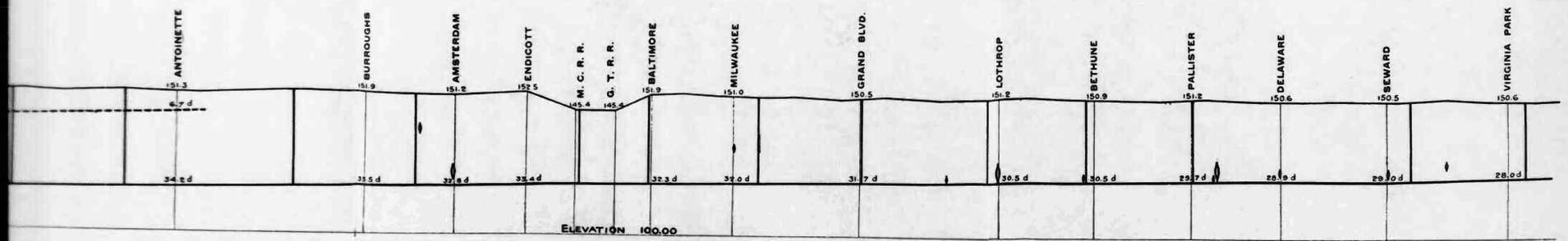
- Invert bottom of 4-0- Cylinder Woodward Avenue Sewer and Tributaries.
- Invert bottom of 9-0- Cylinder Woodward Avenue Sewer and Tributaries.
- 150.5 indicate curb elevations above city datum.
- 28.9d indicate depths of sewer inverts below surface of pavement.



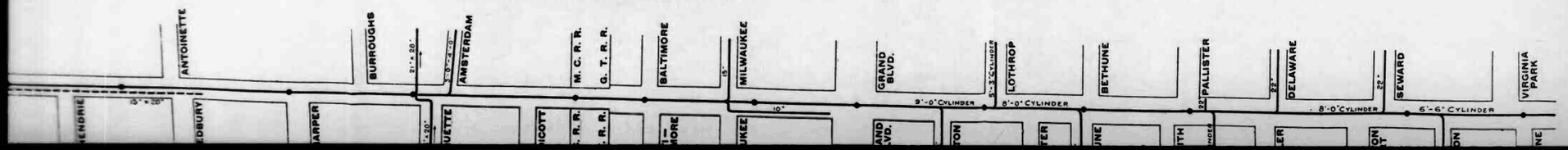
PROFILE OF WOODWARD AVENUE

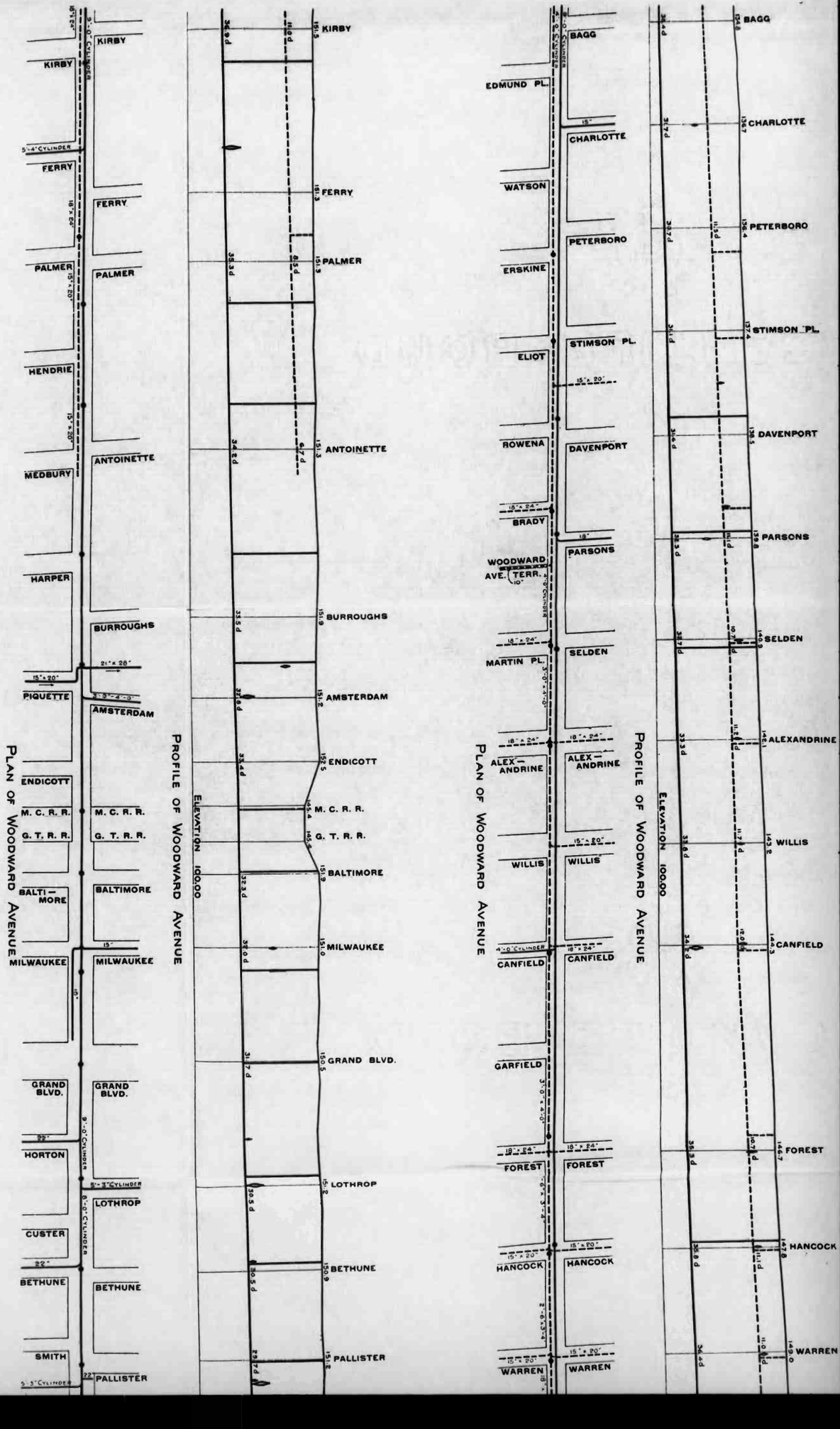


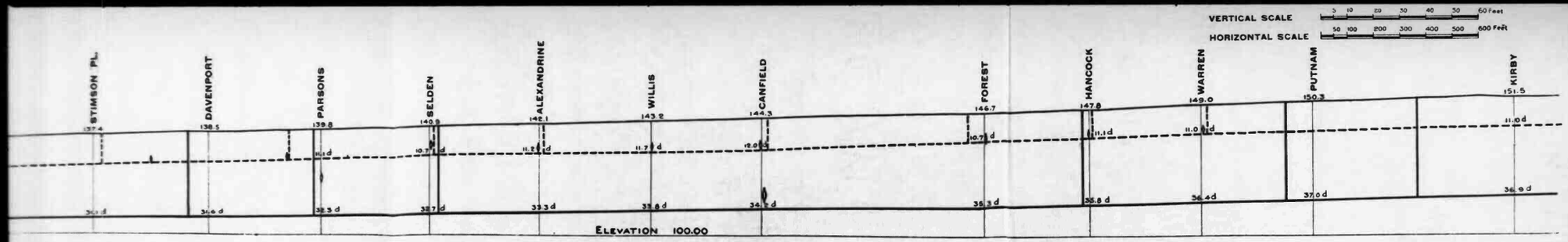
PLAN OF WOODWARD AVENUE



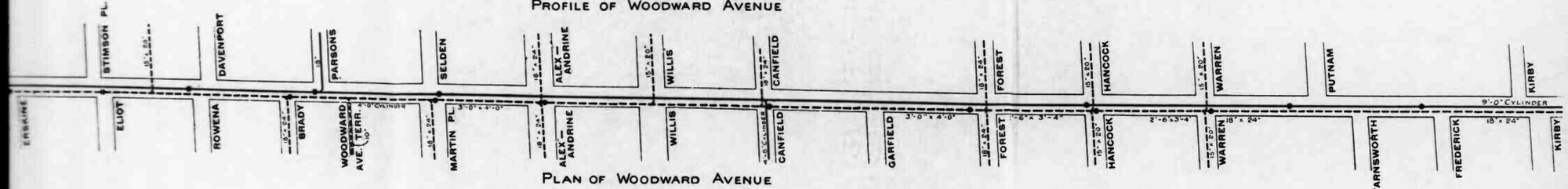
PROFILE OF WOODWARD AVENUE



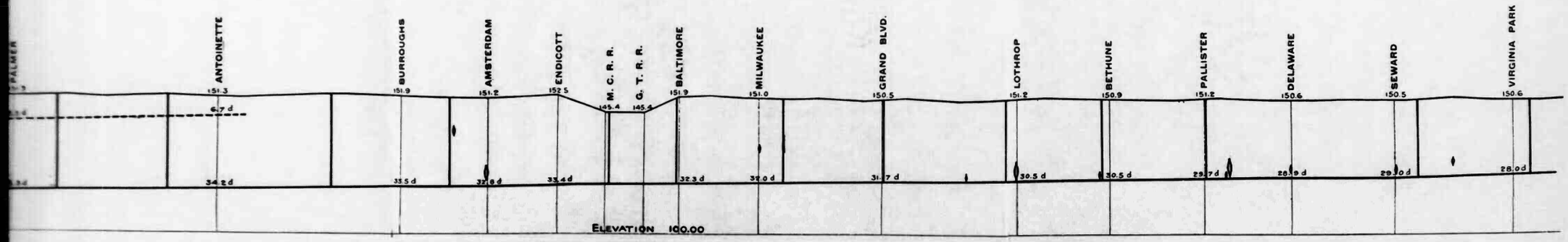

PLAN OF WOODWARD AVENUE
PROFILE OF WOODWARD AVENUE
ELEVATION 100.00
KIRBY
FERRY
PALMER
HENDRIE
MEDBURY
ANTOINETTE
HARPER
BURROUGHS
PIQUETTE
AMSTERDAM
ENDICOTT
M. C. R. R.
G. T. R. R.
BALTI — MORE
BALTIMORE
MILWAUKEE
GRAND BLVD.
HORTON
CUSTER
BETHUNE
SMITH
PALLISTER
EDMUND PL.
BAGG
CHARLOTTE
WATSON
PETERBORO
ERSKINE
STIMSON PL.
ELIOT
ROWENA
DAVENPORT
BRADY
PARSONS
WOODWARD AVE. TERR.
SELDEN
MARTIN PL.
ALEX — ANDRINE
WILLIS
CANFIELD
GARFIELD
FOREST
HANCOCK
WARREN



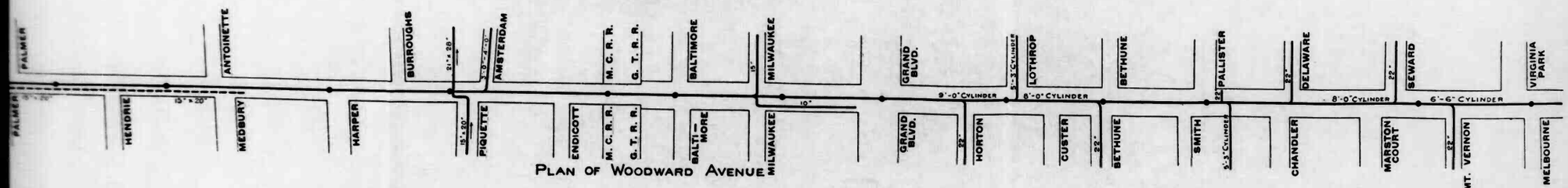
PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE

REDUCTION RATIO 17:1

2.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PLAN 17

WOODWARD AVENUE SUBWAY
PRESENT LOCATION OF SEWERS
FROM VIRGINIA PARK TO D. T. R. R. CROSSING
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

VERTICAL SCALE 5 10 20 30 40 50 60 Feet
HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet

EXPLANATION

PLAN

——— TRIBUTARIES TO 9'-0" CYLINDER WOODWARD AVENUE SEWER.

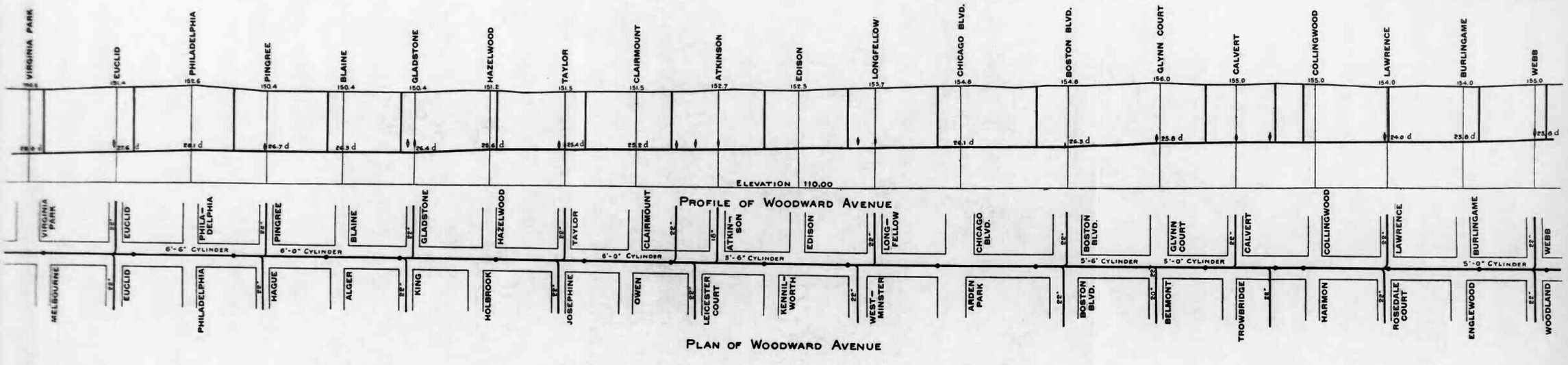
● MANHOLE.

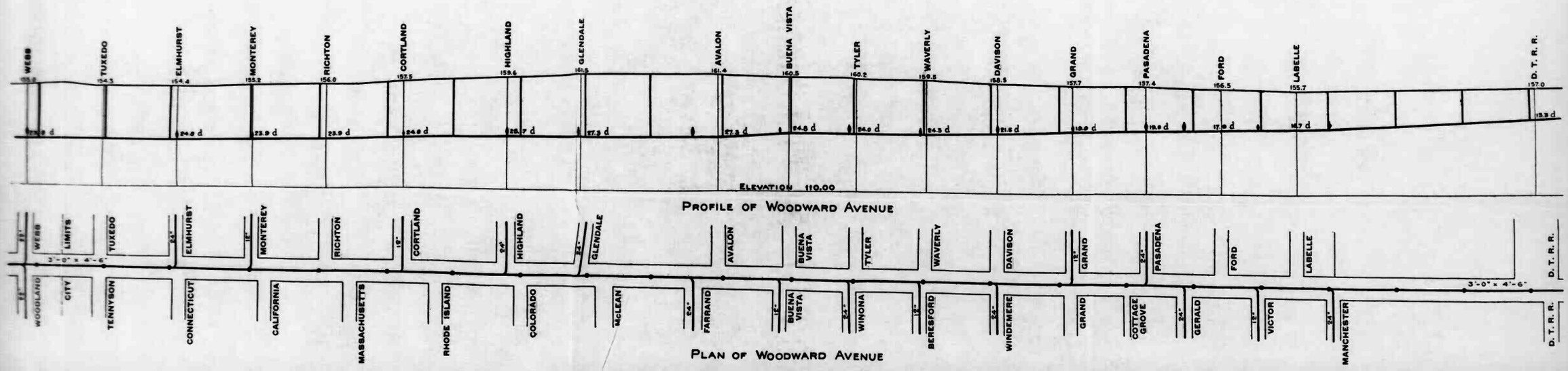
PROFILE

——— INVERT BOTTOM OF TRIBUTARIES TO 9'-0" CYLINDER WOODWARD AVENUE SEWER.

FIGURES 154.0 INDICATE CURB ELEVATIONS ABOVE CITY DATUM.

FIGURES 23.8 d INDICATE DEPTHS OF SEWER INVERTS BELOW SURFACE OF PAVEMENT.





REDUCTION

RATIO

16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A5

A4

A3

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

EXPLANATION

PLAN

—— TRIBUTARIES TO 9'-0" CYLINDER WOODWARD AVENUE SEWER.

● MANHOLE.

PROFILE

—— INVERT BOTTOM OF TRIBUTARIES TO 9'-0" CYLINDER WOODWARD AVENUE SEWER.

FIGURES 154.0 INDICATE CURB ELEVATIONS ABOVE CITY DATUM.

FIGURES 23.8 d INDICATE DEPTHS OF SEWER INVERTS BELOW SURFACE OF PAVEMENT.

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BARCLAY PAR

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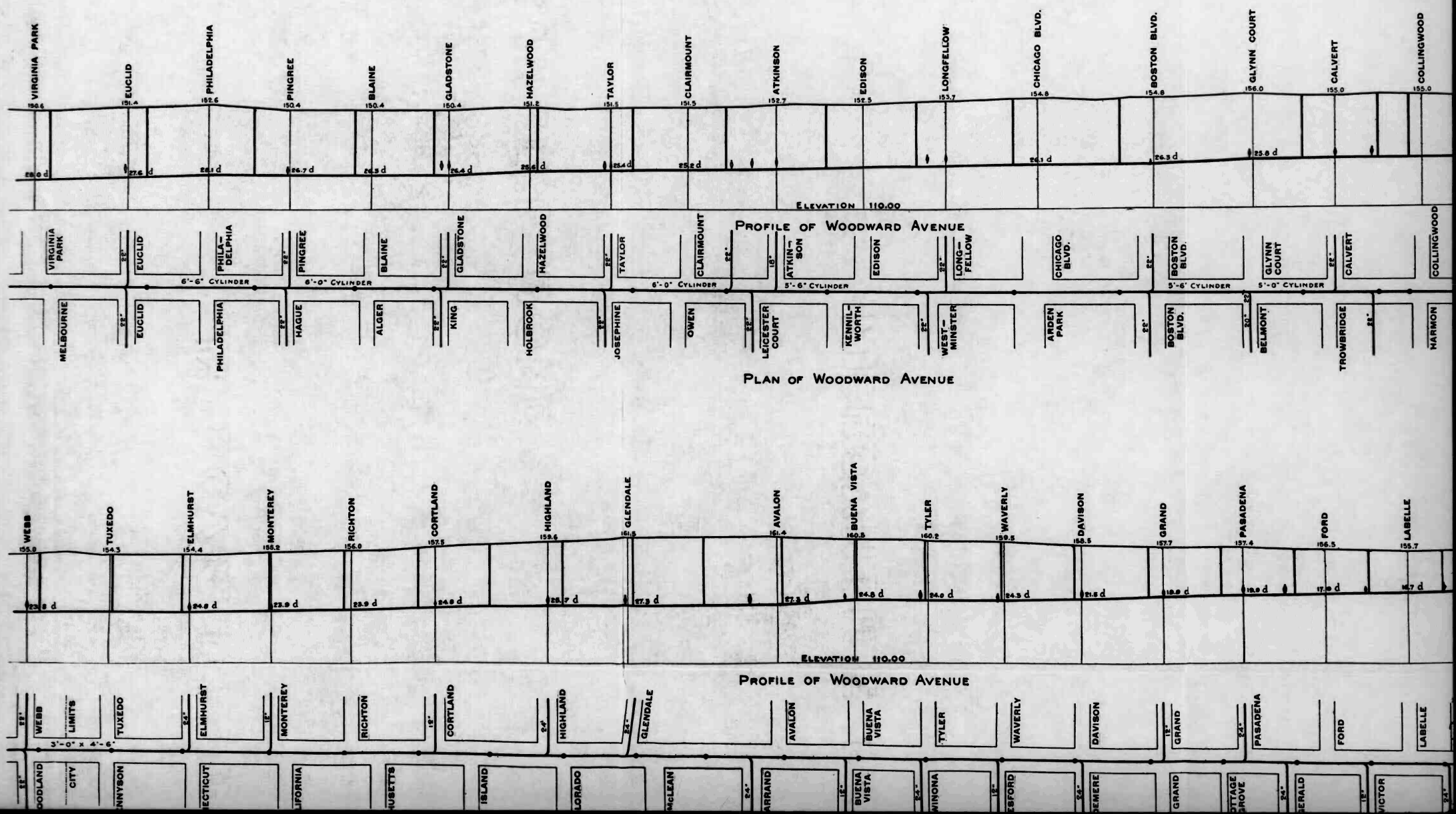
HORIZONTA



TION

PROFILE

INVERT BOTTOM OF TRIBUTARIES TO 9'-0" CYLINDER WOODWARD AVENUE SEWER.

FIGURES 154.0 INDICATE CURB ELEVATIONS ABOVE CITY DATUM.

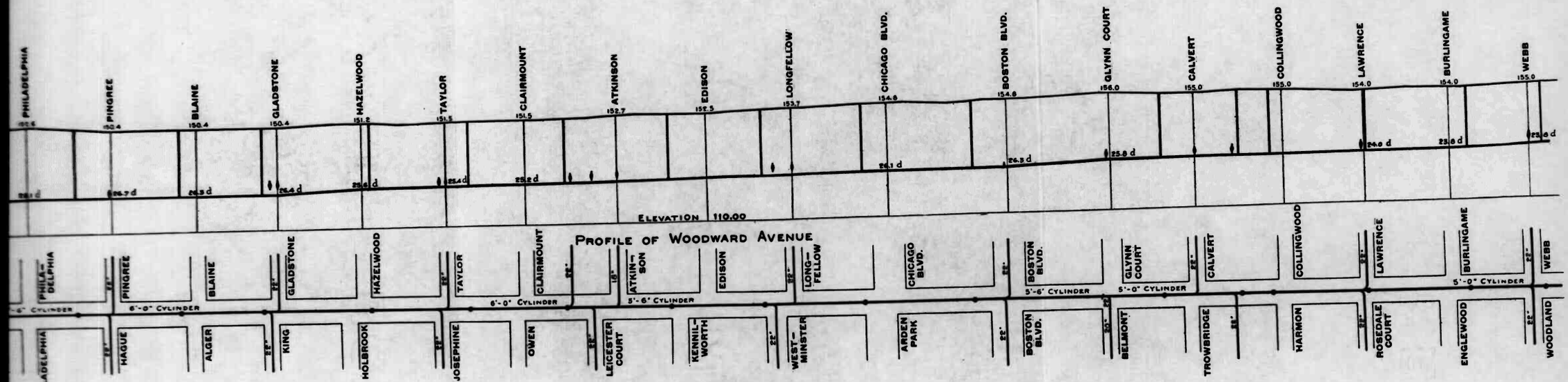
FIGURES 23.8 d INDICATE DEPTHS OF SEWER INVERTS BELOW SURFACE OF PAVEMENT.

PLAN 17

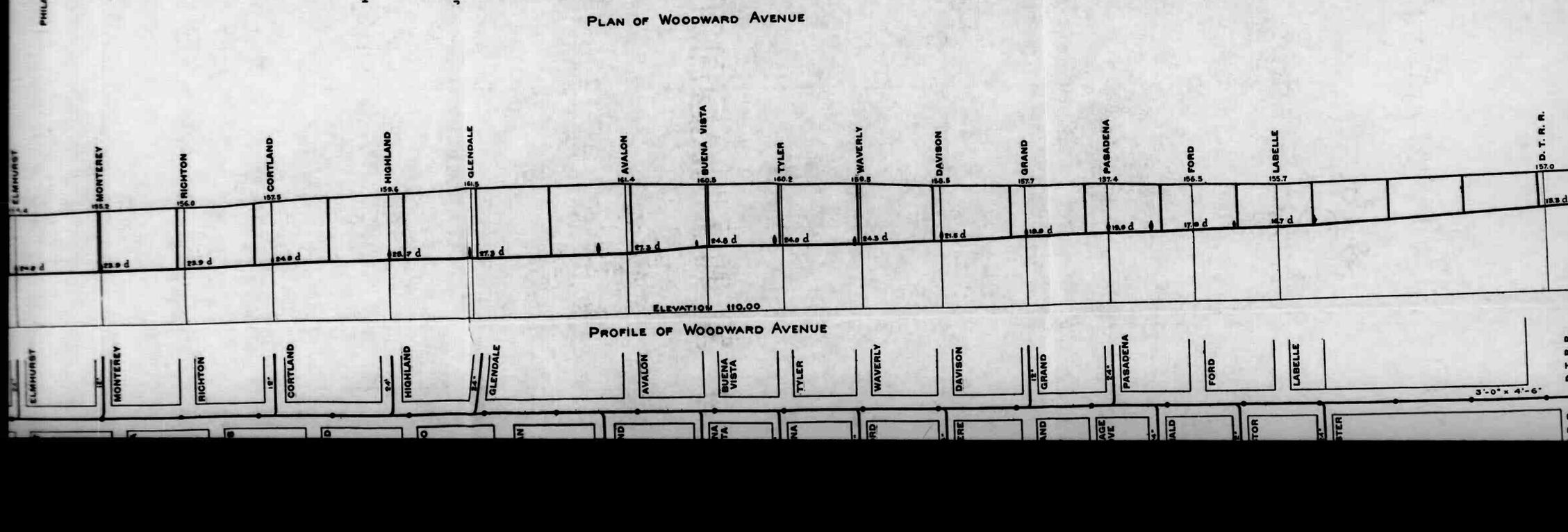
WOODWARD AVENUE SUBWAY
PRESENT LOCATION OF SEWERS
FROM VIRGINIA PARK TO D. T. R. R. CROSSING
ACCOMPANYING REPORT TO BOARD OF STREET RAILWAY COMMISSIONERS CITY OF DETROIT

BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

VERTICAL SCALE
HORIZONTAL SCALE

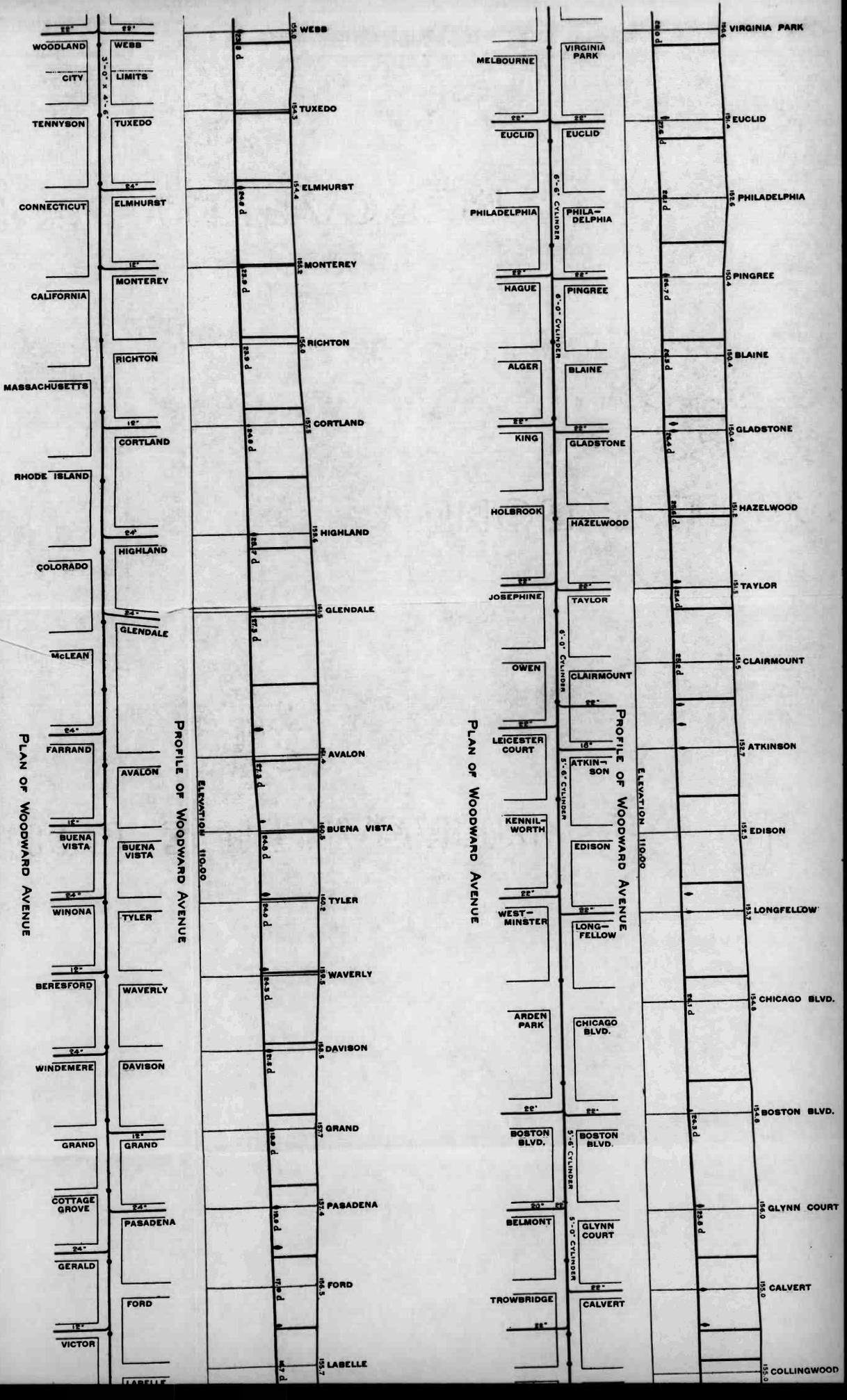


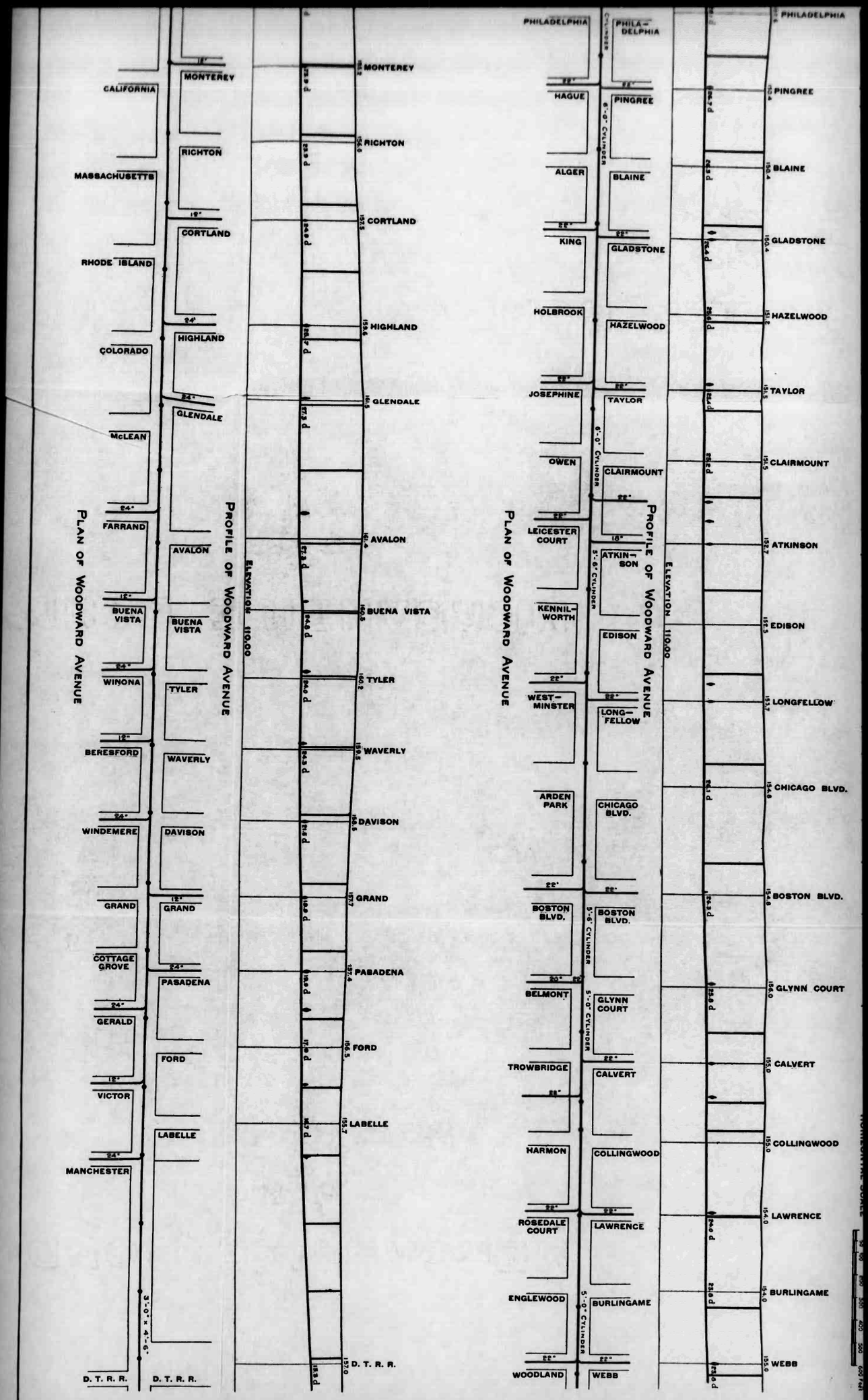
PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE

PROFILE OF WOODWARD AVENUE


PLAN OF WOODWARD AVENUE
PROFILE OF WOODWARD AVENUE
ELEVATION 110.00
WOODLAND
CITY
TENNYSON
CONNECTICUT
CALIFORNIA
MASSACHUSETTS
RHODE ISLAND
COLORADO
McLEAN
FARRAND
WINONA
BERESFORD
WINDEMERE
GRAND
COTTAGE GROVE
GERALD
VICTOR
WEBB
LIMITS
TUXEDO
ELMHURST
MONTEREY
RICHTON
CORTLAND
HIGHLAND
GLENDALE
AVALON
BUENA VISTA
TYLER
WAVERLY
DAVISON
GRAND
PASADENA
FORD
LABELLE
3'-0" x 4'-6"
MELBOURNE
EUCLID
PHILADELPHIA
HAGUE
ALGER
KING
HOLBROOK
JOSEPHINE
OWEN
LEICESTER COURT
KENNILWORTH
WESTMINSTER
ARDEN PARK
BOSTON BLVD.
BELMONT
TROWBRIDGE
VIRGINIA PARK
PHILADELPHIA
PINGREE
BLAINE
GLADSTONE
HAZELWOOD
TAYLOR
CLAIRMOUNT
ATKINSON
EDISON
LONGFELLOW
CHICAGO BLVD.
GLYNN COURT
CALVERT
6'-6" CYLINDER
6'-0" CYLINDER
5'-6" CYLINDER
5'-0" CYLINDER
VIRGINIA PARK
EUCLID
PHILADELPHIA
PINGREE
BLAINE
GLADSTONE
HAZELWOOD
TAYLOR
CLAIRMOUNT
ATKINSON
EDISON
LONGFELLOW
CHICAGO BLVD.
BOSTON BLVD.
GLYNN COURT
CALVERT
COLLINGWOOD


PLAN OF WOODWARD AVENUE
PROFILE OF WOODWARD AVENUE
ELEVATION 110.00
CALIFORNIA
MASSACHUSETTS
RHODE ISLAND
COLORADO
McLEAN
FARRAND
BUENA VISTA
WINONA
BERESFORD
WINDEMERE
GRAND
COTTAGE GROVE
GERALD
VICTOR
MANCHESTER
MONTEREY
RICHTON
CORTLAND
HIGHLAND
GLENDALE
AVALON
BUENA VISTA
TYLER
WAVERLY
DAVISON
GRAND
PASADENA
FORD
LABELLE
D. T. R. R.
D. T. R. R.
3'-0" x 4'-6"
MONTEREY
RICHTON
CORTLAND
HIGHLAND
GLENDALE
AVALON
BUENA VISTA
TYLER
WAVERLY
DAVISON
GRAND
PASADENA
FORD
LABELLE
D. T. R. R.
PLAN OF WOODWARD AVENUE
PROFILE OF WOODWARD AVENUE
ELEVATION 110.00
PHILADELPHIA
HAGUE
ALGER
KING
HOLBROOK
JOSEPHINE
OWEN
LEICESTER COURT
KENNILWORTH
WESTMINSTER
ARDEN PARK
BOSTON BLVD.
BELMONT
TROWBRIDGE
HARMON
ROSEDALE COURT
ENGLEWOOD
WOODLAND
PHILADELPHIA
PINGREE
BLAINE
GLADSTONE
HAZELWOOD
TAYLOR
CLAIRMOUNT
ATKINSON
EDISON
LONGFELLOW
CHICAGO BLVD.
BOSTON BLVD.
GLYNN COURT
CALVERT
COLLINGWOOD
LAWRENCE
BURLINGAME
WEBB
6'-0" CYLINDER
5'-6" CYLINDER
5'-0" CYLINDER
PHILADELPHIA
PINGREE
BLAINE
GLADSTONE
HAZELWOOD
TAYLOR
CLAIRMOUNT
ATKINSON
EDISON
LONGFELLOW
CHICAGO BLVD.
BOSTON BLVD.
GLYNN COURT
CALVERT
COLLINGWOOD
LAWRENCE
BURLINGAME
WEBB

PLAN 18

WOODWARD AVENUE SUBWAY
PRESENT LOCATION OF PRIVATE TUNNELS

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY 1915

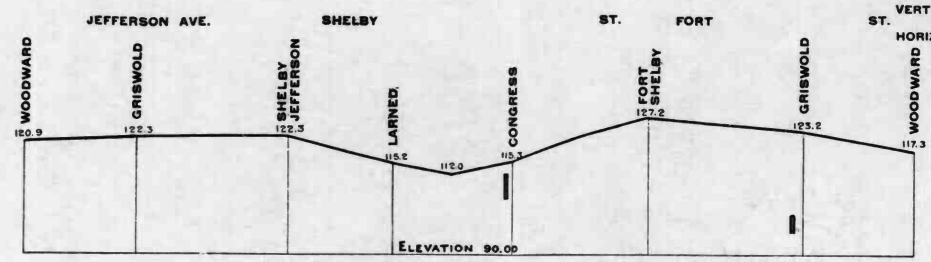
EXPLANATION

Central Heating (C. H.) Tunnels.

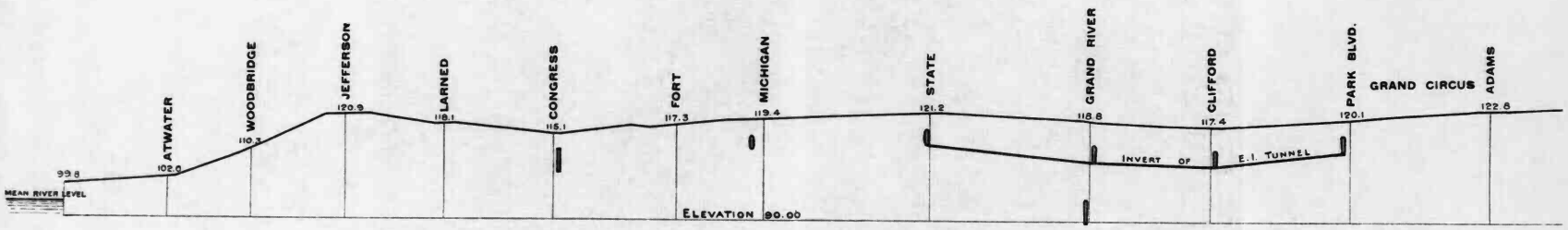
Murphy Power Co. (M. P. Co.), Edison Illuminating (E. I.), Public Lighting Commission (P.L.C.) and Ford Building (F. B.) Tunnels.

For location of Loop see Plan No. 12.

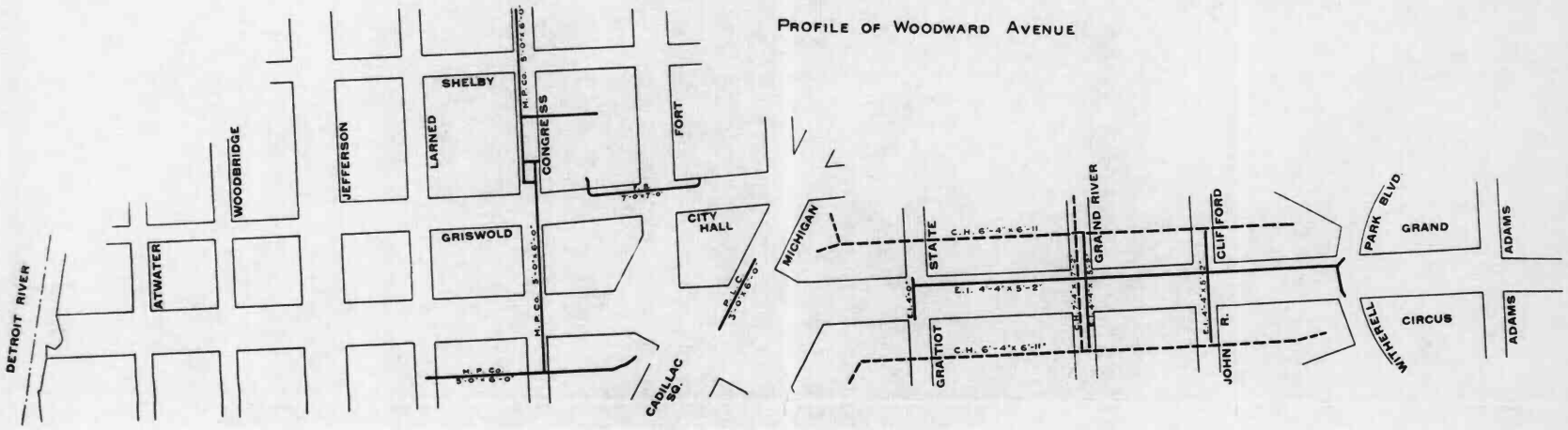
VERTICAL SCALE 5 10 20 30 40 50 60 Feet
HORIZONTAL SCALE 50 100 200 300 400 500 600 Feet



PROFILE OF LOOP



PROFILE OF WOODWARD AVENUE



PLAN OF WOODWARD AVENUE AND LOOP

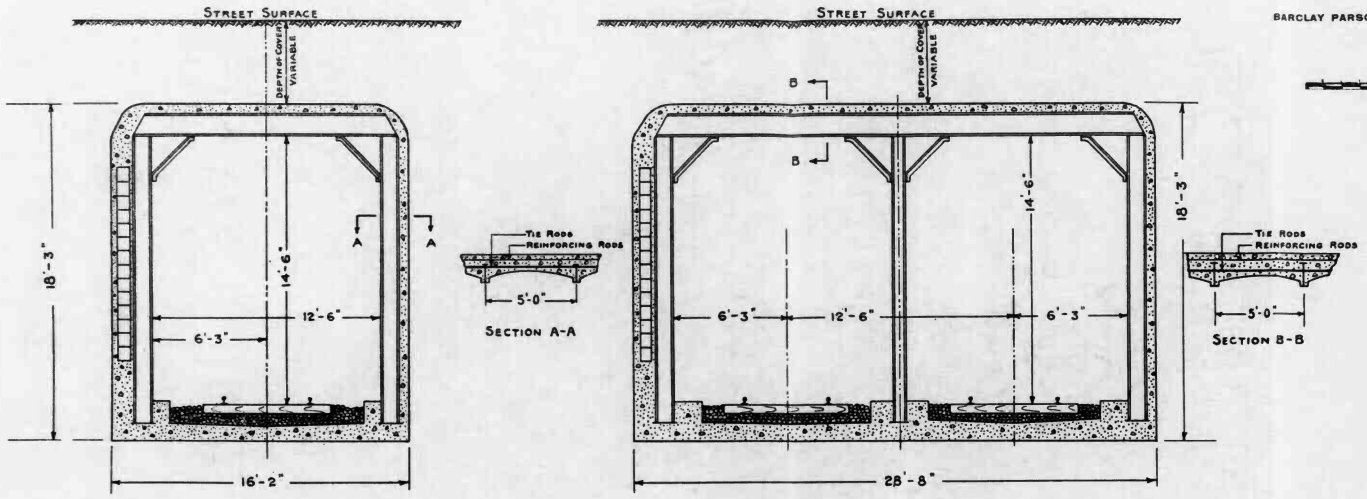
PLAN 19

WOODWARD AVENUE SUBWAY
TYPICAL SECTIONS

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

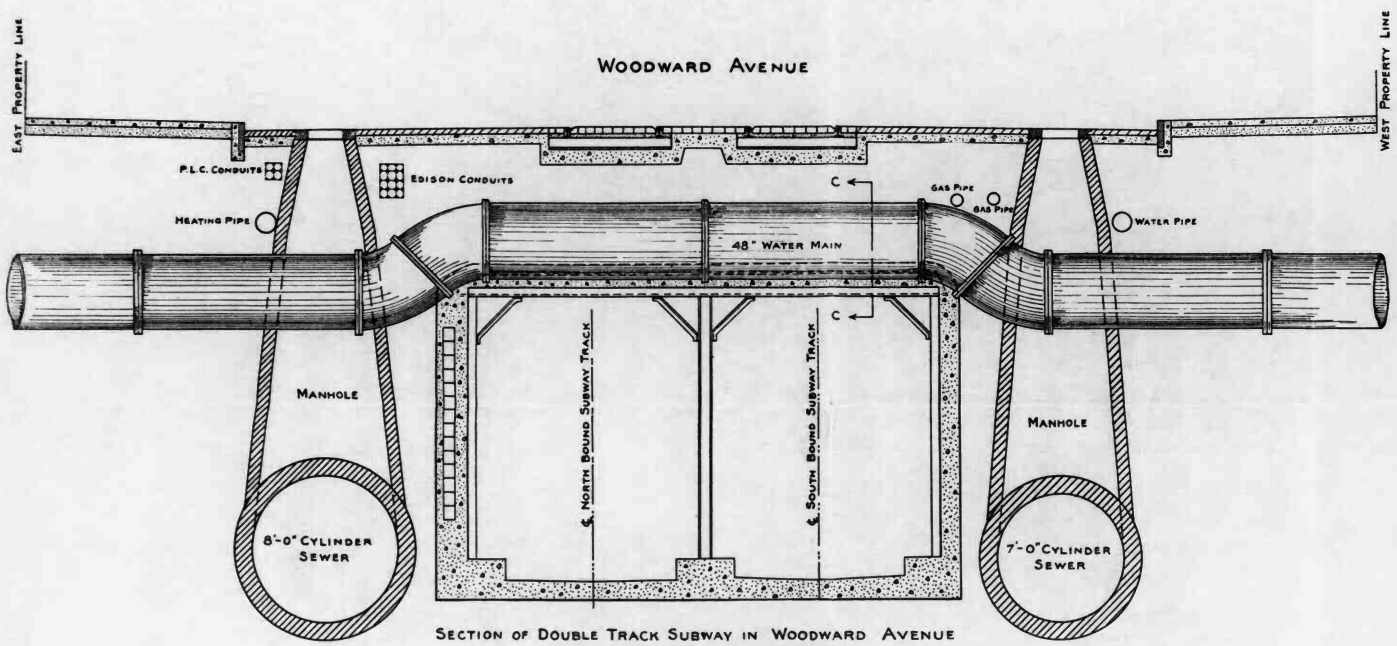
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY 1915

SCALE
0 5 10 15 Feet



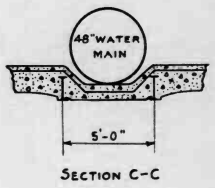
SINGLE TRACK SUBWAY – TYPICAL SECTION

DOUBLE TRACK SUBWAY – TYPICAL SECTION



SECTION OF DOUBLE TRACK SUBWAY IN WOODWARD AVENUE
AT HIGH STREET, LOOKING SOUTH

SHOWING METHOD OF CARRYING 48" WATER MAIN ACROSS WOODWARD AVENUE AND TYPICAL LOCATION OF SEWERS, MANHOLES, PIPES AND CONDUITS.



SECTION C-C

REDUCTION RATIO 17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

A&D

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PLAN 20

WOODWARD AVENUE SUBWAY

PART PLAN AND SECTION

OF CITY HALL STATION

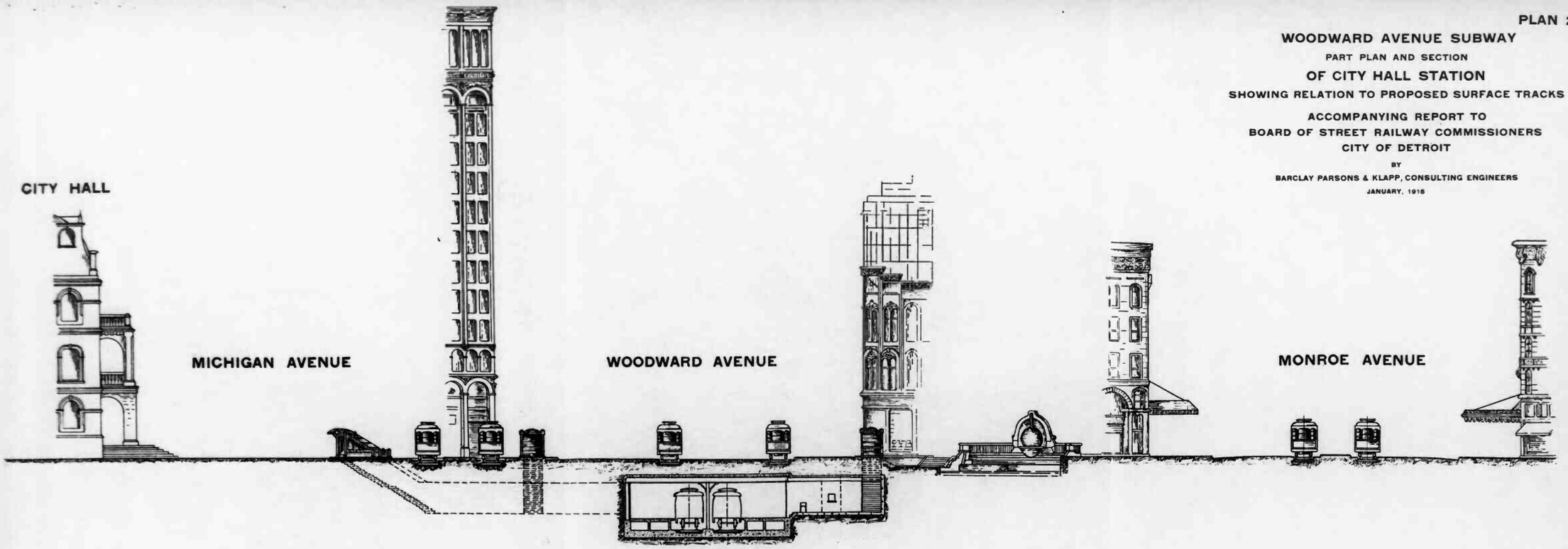
SHOWING RELATION TO PROPOSED SURFACE TRACKS

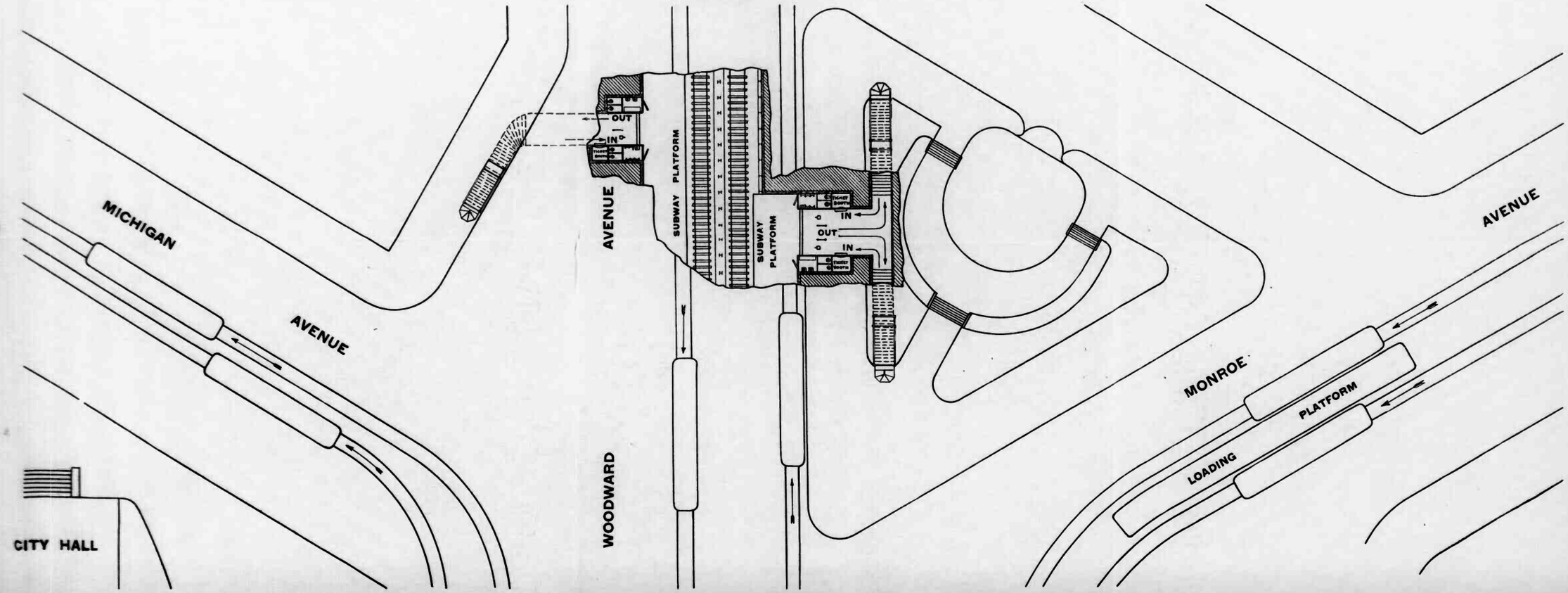
ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY

BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS

JANUARY, 1916





REDUCTION RATIO 16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

1.8

2.0

2.2

2.5

2.8

3.2

3.6

4.0

4.5

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

A&D

1303 Geneva Avenue
St. Paul, MN 55119

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

4.5 mm

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

WOODWAR

PART

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SHOWING RELATION

ACCOMP

BOARD OF STREE

CI

BARCLAY PARSONS

CITY HALL

MICHIGAN AVENUE

WOODWARD AVENUE

MONROE

MICHIGAN AVENUE

SUBWAY PLATFORM

SUBWAY PLATFORM

OUT

IN

IN

OUT

IN

MONROE

PLATFORM

PLAN 20

WOODWARD AVENUE SUBWAY

PART PLAN AND SECTION

OF CITY HALL STATION

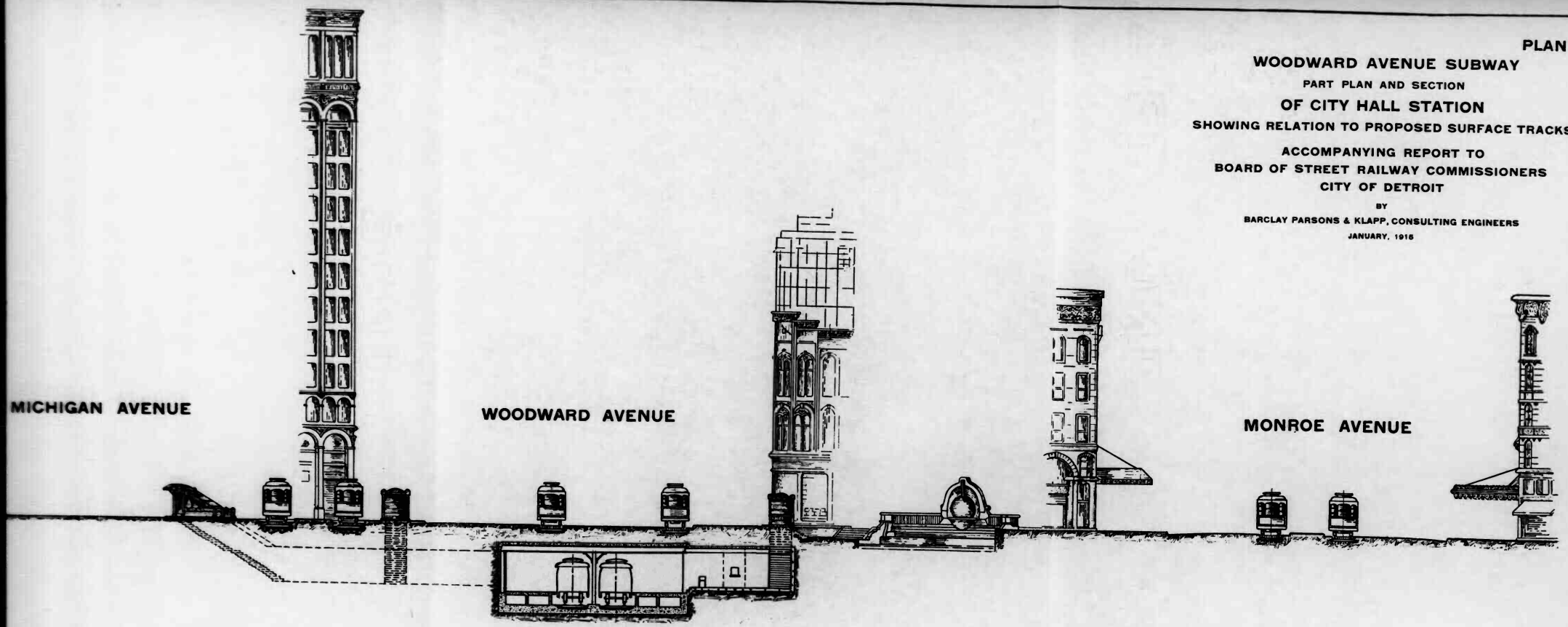
SHOWING RELATION TO PROPOSED SURFACE TRACKS

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

BY

BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS

JANUARY, 1915



MICHIGAN AVENUE

WOODWARD AVENUE

MONROE

MICHIGAN AVENUE

CITY HALL

WOODWARD AVENUE

SUBWAY PLATFORM

SUBWAY PLATFORM

OUT

IN

IN

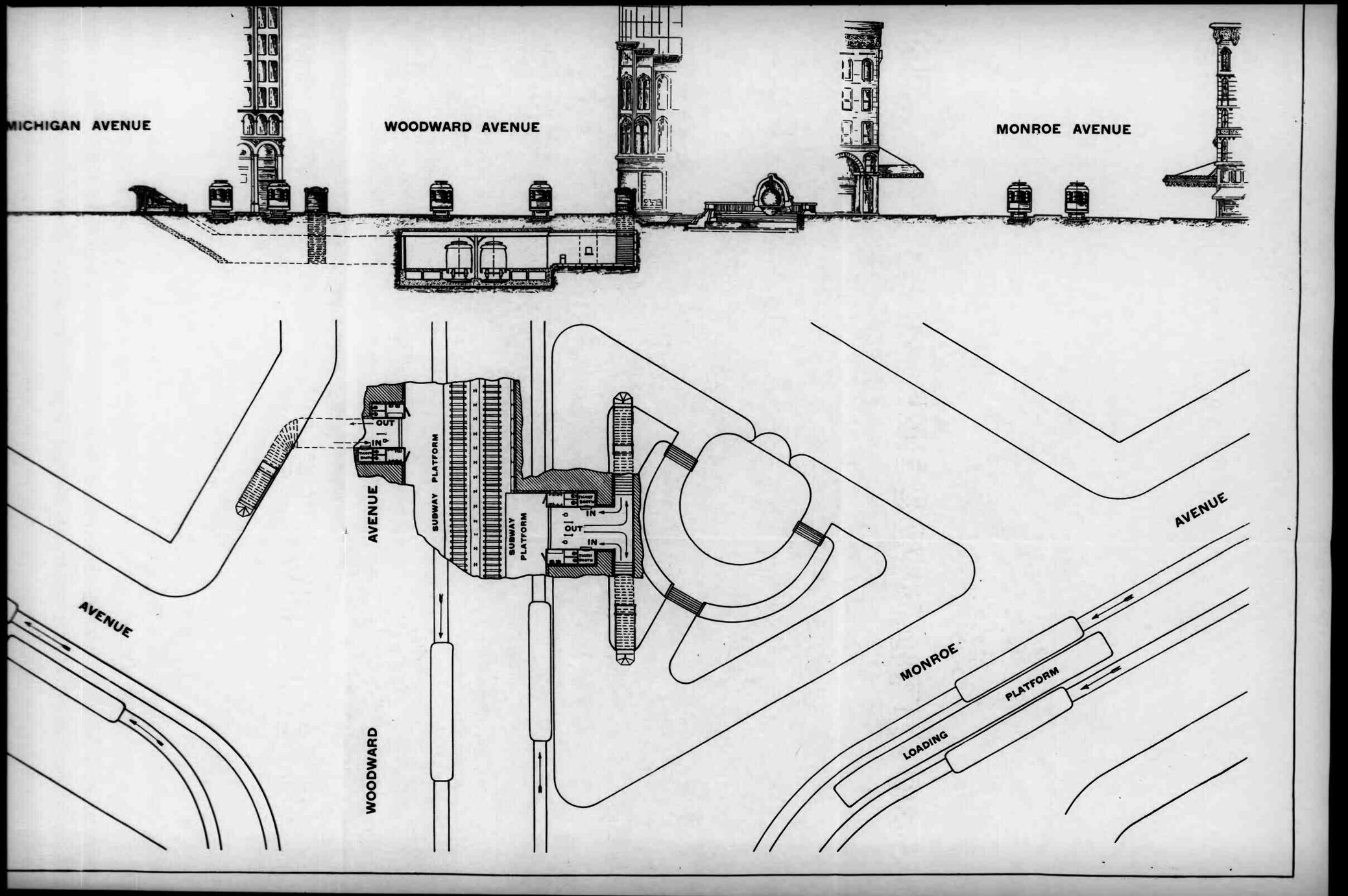
OUT

IN

MONROE

PLATFORM

LOADING


MICHIGAN AVENUE
WOODWARD AVENUE
MONROE AVENUE
SUBWAY PLATFORM
SUBWAY PLATFORM
OUT
IN
IN
OUT
IN
AVENUE
AVENUE
AVENUE
WOODWARD
MONROE
PLATFORM
LOADING

REDUCTION

RATIO

17:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

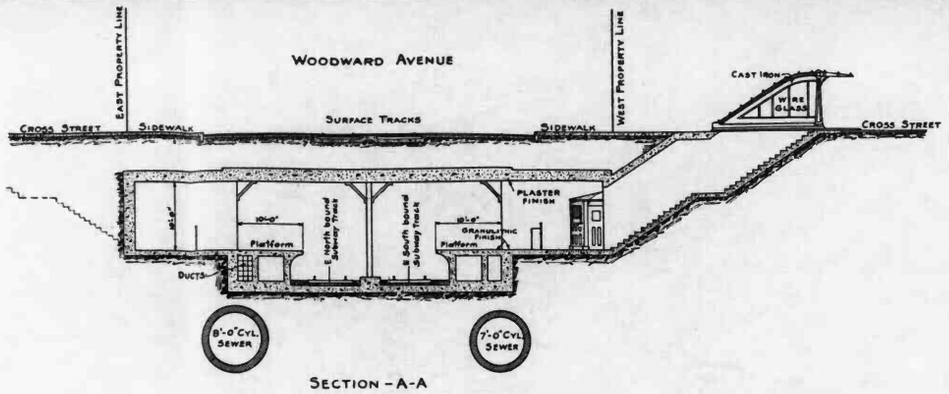
PLAN 21

WOODWARD AVENUE SUBWAY
TYPICAL STATION

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

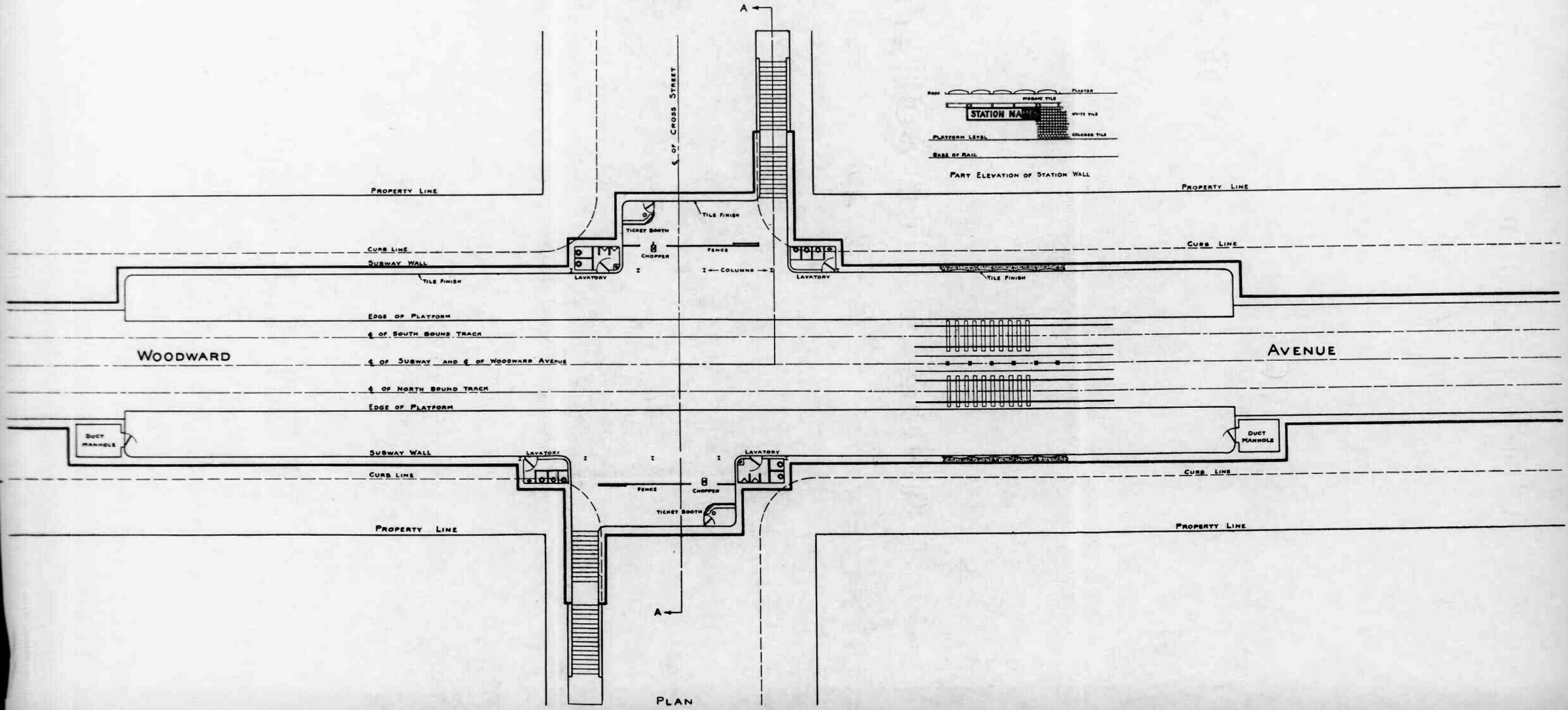
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

SCALE
5 10 15 20 30 40 Feet



SECTION - A-A

PART ELEVATION OF STATION WALL



PLAN

REDUCTION RATIO 16:1

REDUCTION RATIO 16:1

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

2.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

1.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

PM-MGP 13"x18"
METRIC GENERAL PURPOSE TARGET
PHOTOGRAPHIC

200 mm

150 mm

100 mm

A3

A4

A5

1.0

1.1

1.25

1.4

1.6

1.8

2.2

2.0

2.5

1.0 mm

1.5 mm

2.0 mm

2.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

PRECISION℠ RESOLUTION TARGETS

Century

1303 Geneva Avenue
St. Paul, MN 55119

4.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

3.5 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

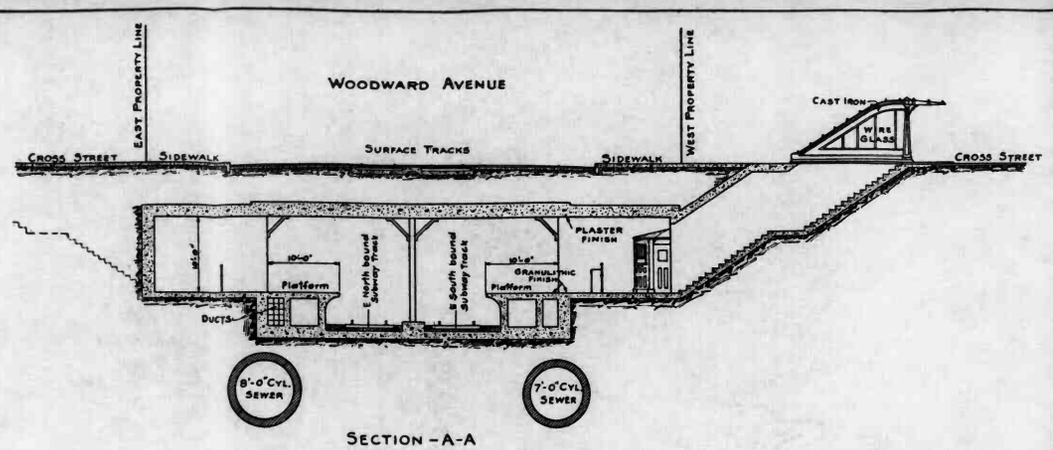
3.0 mm

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890

WOODWARD AVE
TYPICAL S
ACCOMPANYING
BOARD OF STREET RAILW
CITY OF D

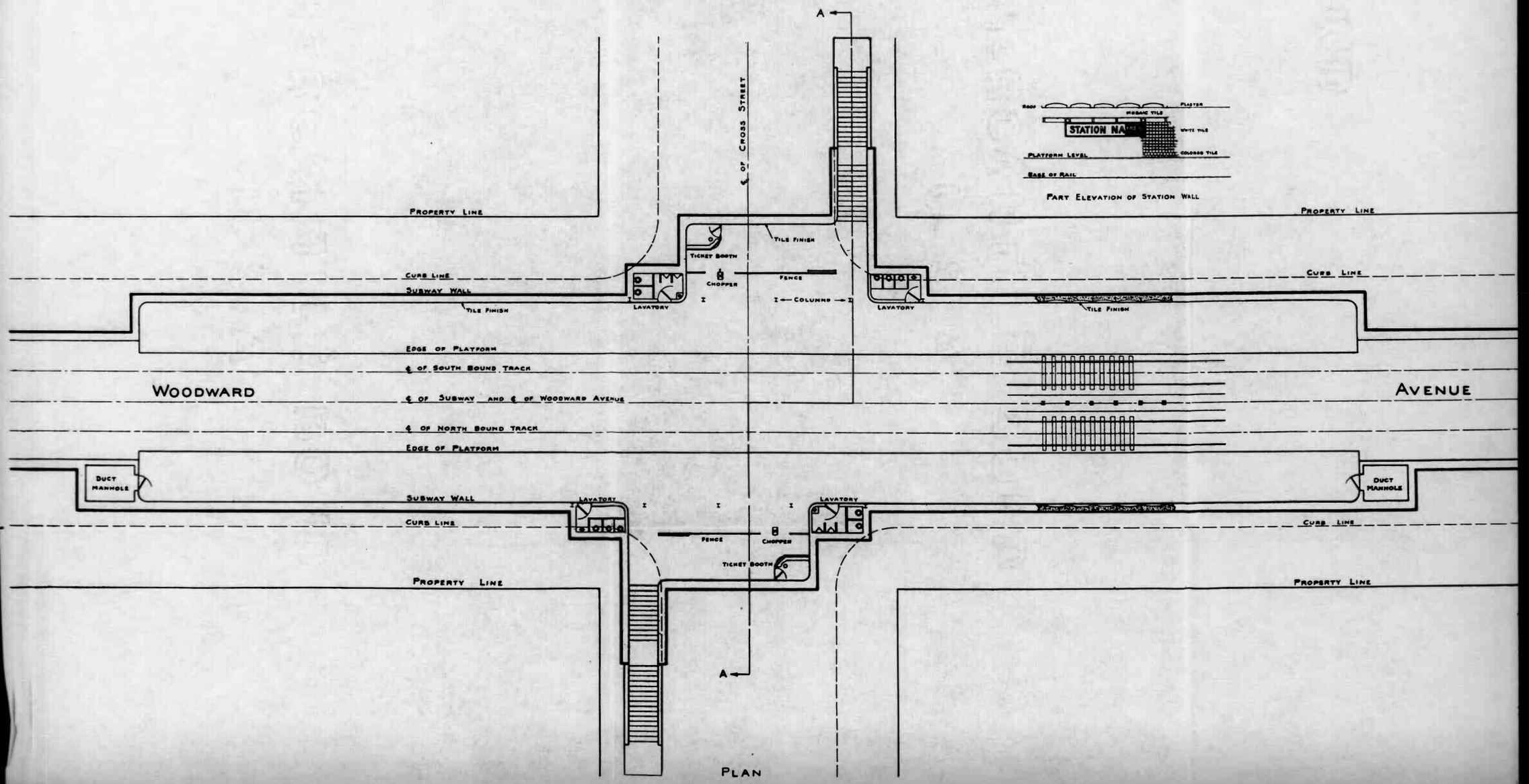
BY
BARCLAY PARSONS & KLAPP,
JANUARY,

SCAL



SECTION - A-A

PART ELEVATION OF STATION WALL



PLAN

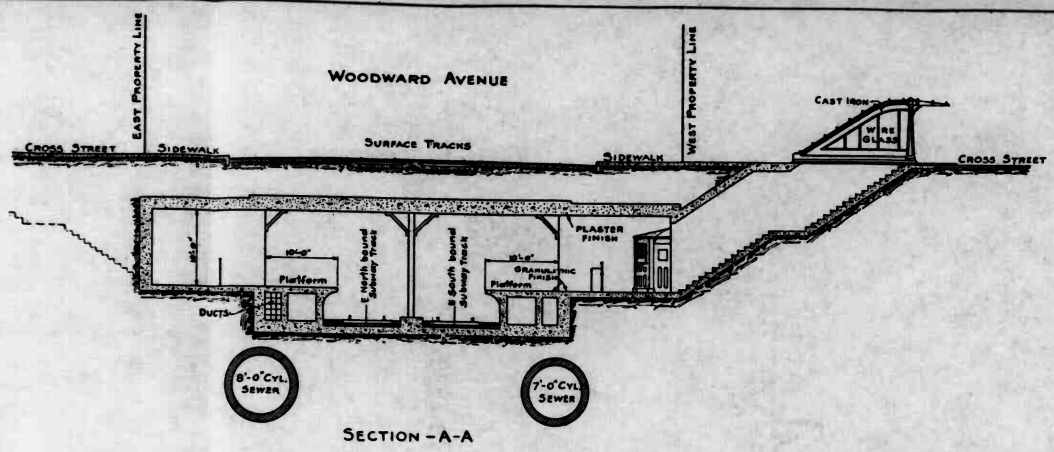
PLAN 21

WOODWARD AVENUE SUBWAY
TYPICAL STATION

ACCOMPANYING REPORT TO
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT

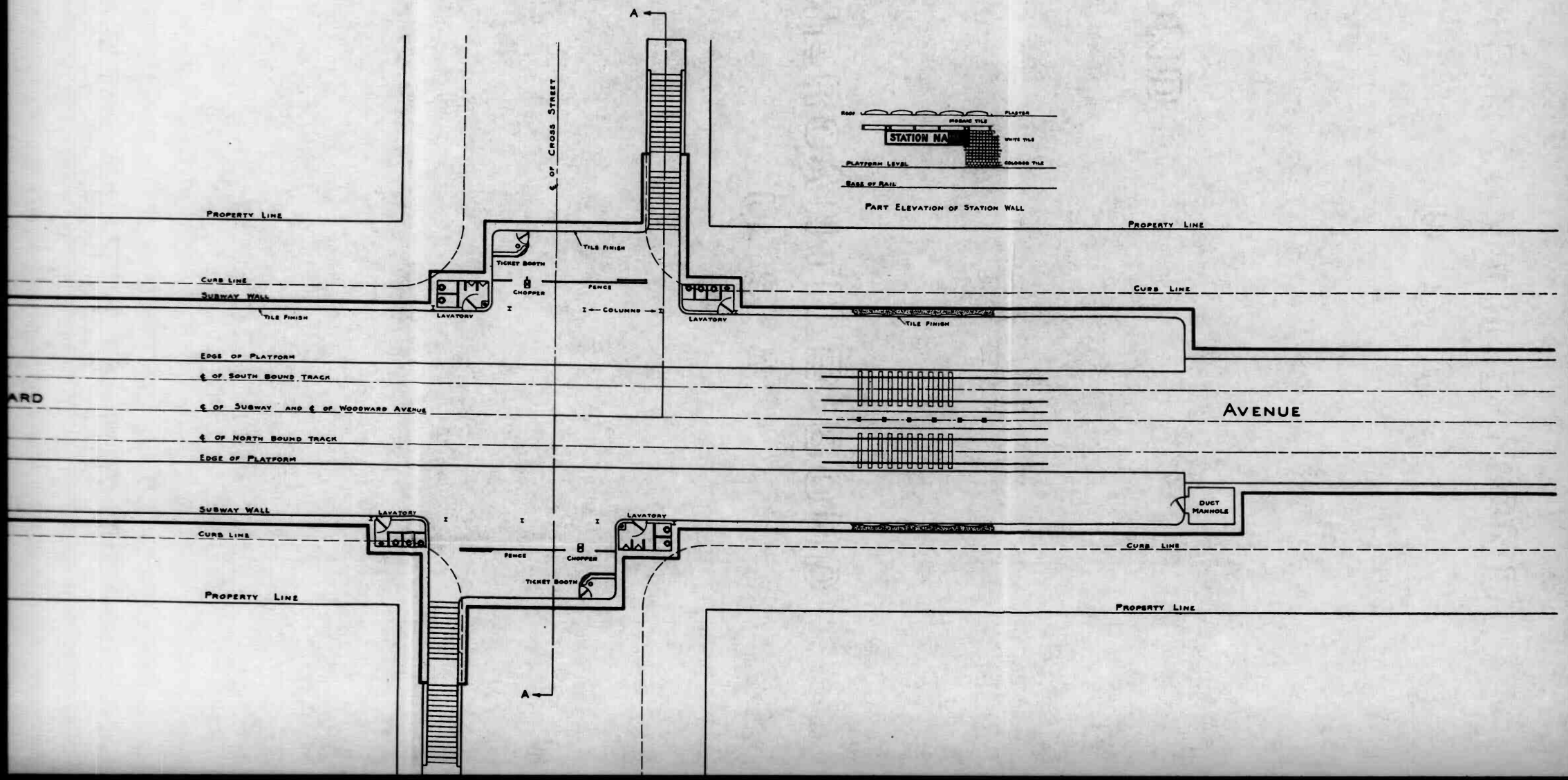
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

SCALE
5 10 15 20 30 40 Feet



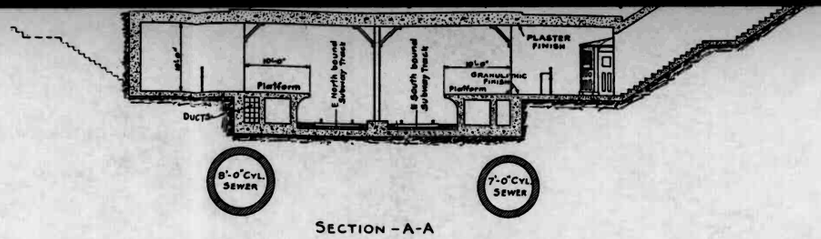
SECTION - A-A

PART ELEVATION OF STATION WALL



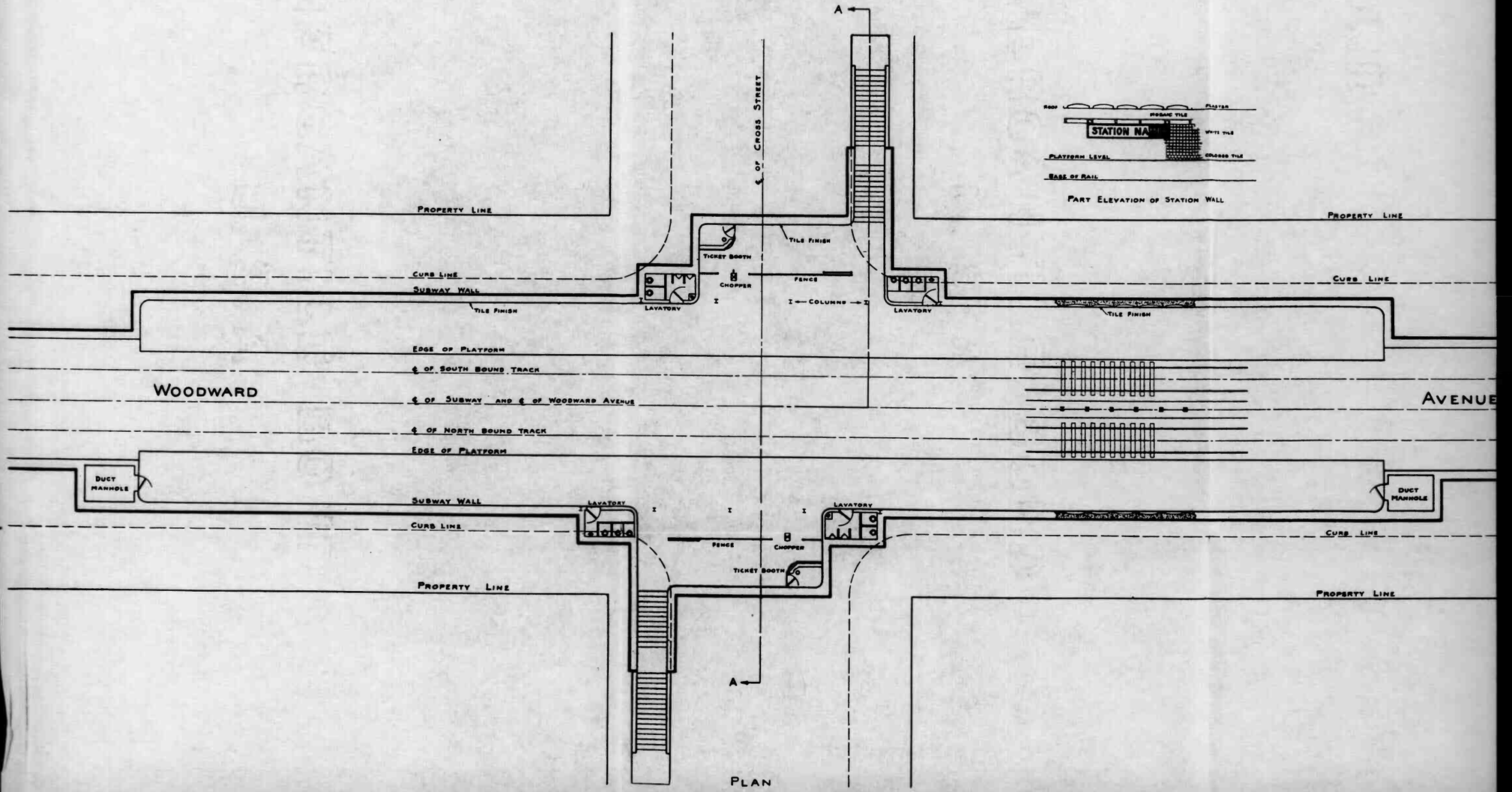
BOARD OF STRE
C

BARCLAY PARSONS



SECTION - A-A

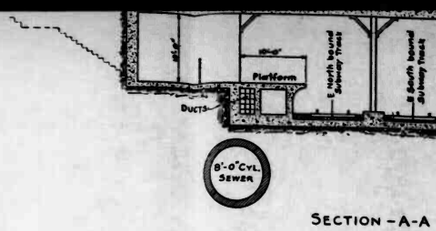
PART ELEVATION OF STATION WALL



PLAN

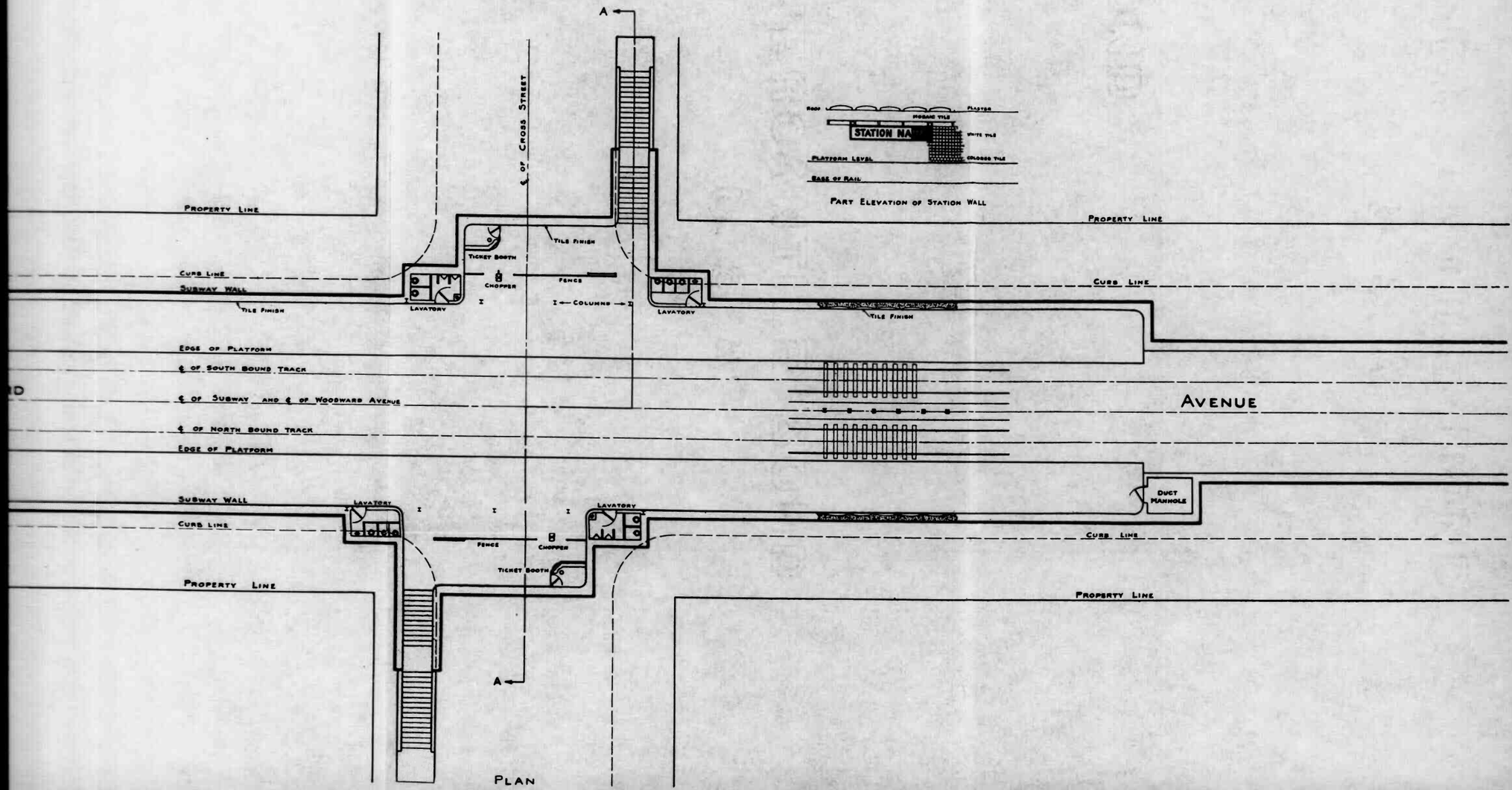
BOARD OF STREET RAILWAY COMMISSIONERS
CITY OF DETROIT
BY
BARCLAY PARSONS & KLAPP, CONSULTING ENGINEERS
JANUARY, 1915

SCALE
0 5 10 15 20 30 40 Feet



SECTION - A-A

PART ELEVATION OF STATION WALL



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